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**ALLIED (GEOGRAPHICAL SECTION)**  
**SOUTHWEST PACIFIC AREA**

**TERRAIN STUDY No. 88**

**SAMAR PROVINCE**

**(PHILIPPINE SERIES)**

**21 September, 1944**

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General Headquarters,  
Southwest Pacific Area,  
21 September 1944

This Terrain Study contains geographical information on Samar Province area (Philippine Islands), as defined in the Orientation Map.

All available geographical information of value to staffs for operational and planning purposes has been collated and is incorporated herein.

The maps are intended to be used in conjunction with operational maps.

By command of General MacARTHUR.

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REPORT DOCUMENTATION PAGE					Form Approved OMB No. 0704-0188	
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1. REPORT DATE (DD-MM-YYYY) 21-09-1944		2. REPORT TYPE Terrain Study		3. DATES COVERED (From - To)		
4. TITLE AND SUBTITLE Terrain Study Samar Province, Philippine Series				5a. CONTRACT NUMBER		
				5b. GRANT NUMBER		
				5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S) Allied Forces Geographical Section, Southwest Pacific Area US Geological Survey, Military Geology Unit US Army Corps of Engineers				5d. PROJECT NUMBER 88		
				5e. TASK NUMBER		
				5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) General Headquarters, Southwest Pacific Area.				8. PERFORMING ORGANIZATION REPORT NUMBER Terrain Study Number 88		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S) MGU; USACE; USGS		
				11. SPONSOR/MONITOR'S REPORT NUMBER(S) Number 88		
12. DISTRIBUTION/AVAILABILITY STATEMENT Unclassified/Unlimited. Available for public distribution.						
13. SUPPLEMENTARY NOTES This Terrain Study contains all available geographical information of value for staffs for operational and planning purposes and this has been collated and incorporated herein. The maps are intended to be used in conjunction with operational maps.						
14. ABSTRACT Samar Island is the most NE island of the Visayan Group of the Philippine Archipelago. This report includes: Military importance; Offshore conditions and islands; Ports, anchorages and harbors; Descriptions of coasts and beaches; Physiography; Vegetation; Rivers, lakes and swamps; Airfields and landing grounds; Roads and Trails; Transport; Signal communication; Towns and barrios; Resources, repair facilities, etc.; Population; Administration; Medical problems; Climate and meteorological conditions; Sources of information- publications and persons with local knowledge interviewed; Japanese equivalents of place names. 39 B&W photographs; 20 maps.						
15. SUBJECT TERMS Airfields. Anchorages. Catbalogan. Climate. Geology. Medical. Meteorology. Philippines. Physiography. Population. Reefs. Rivers. Roads. Samar. Terrain Study. Topography. Trafficability. Transportation. Vegetation. Water.						
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT  UU	18. NUMBER OF PAGES  92	19a. NAME OF RESPONSIBLE PERSON	
a. REPORT  UU	b. ABSTRACT  UU	c. THIS PAGE  UU			19b. TELEPHONE NUMBER (Include area code)	



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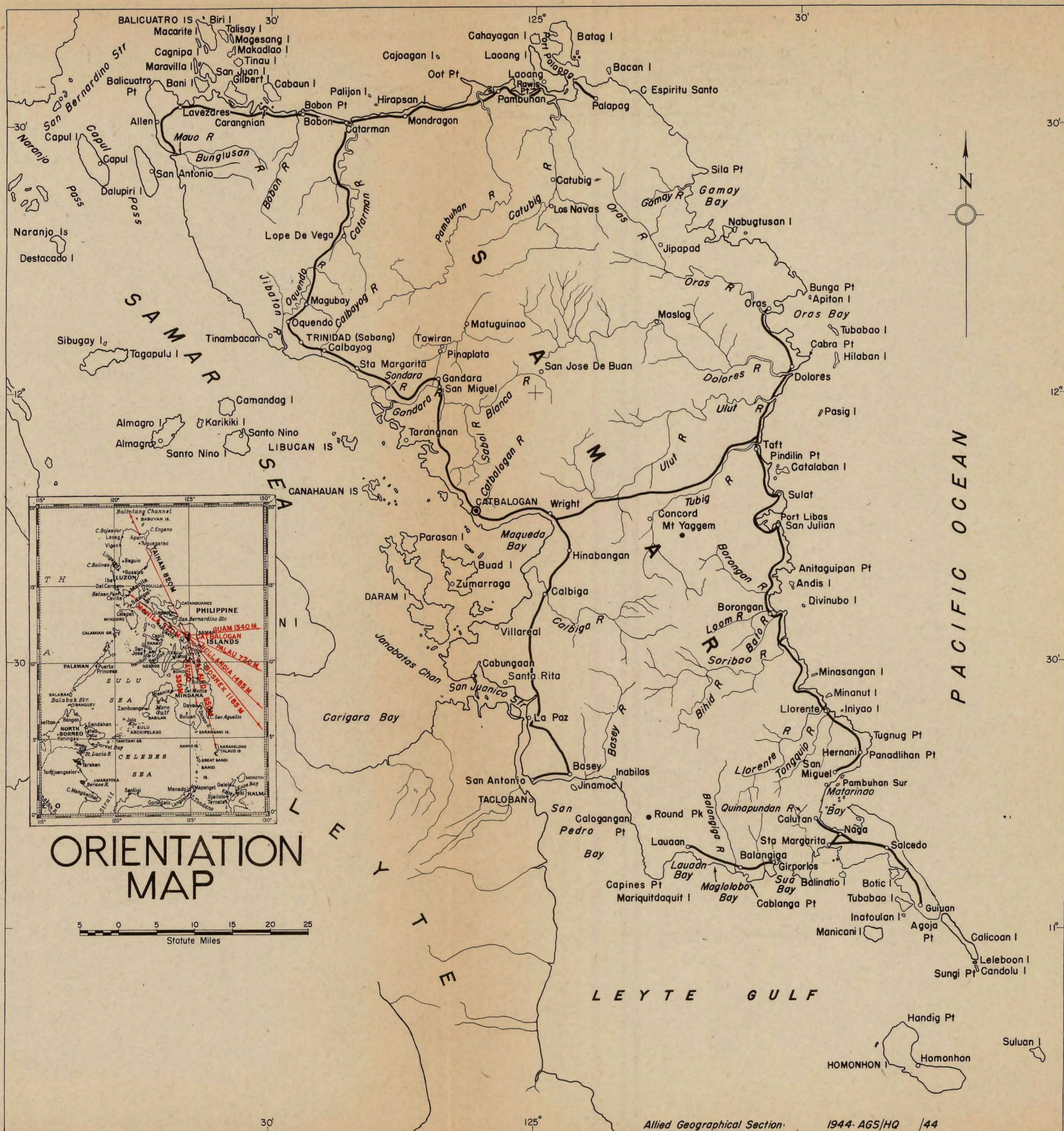


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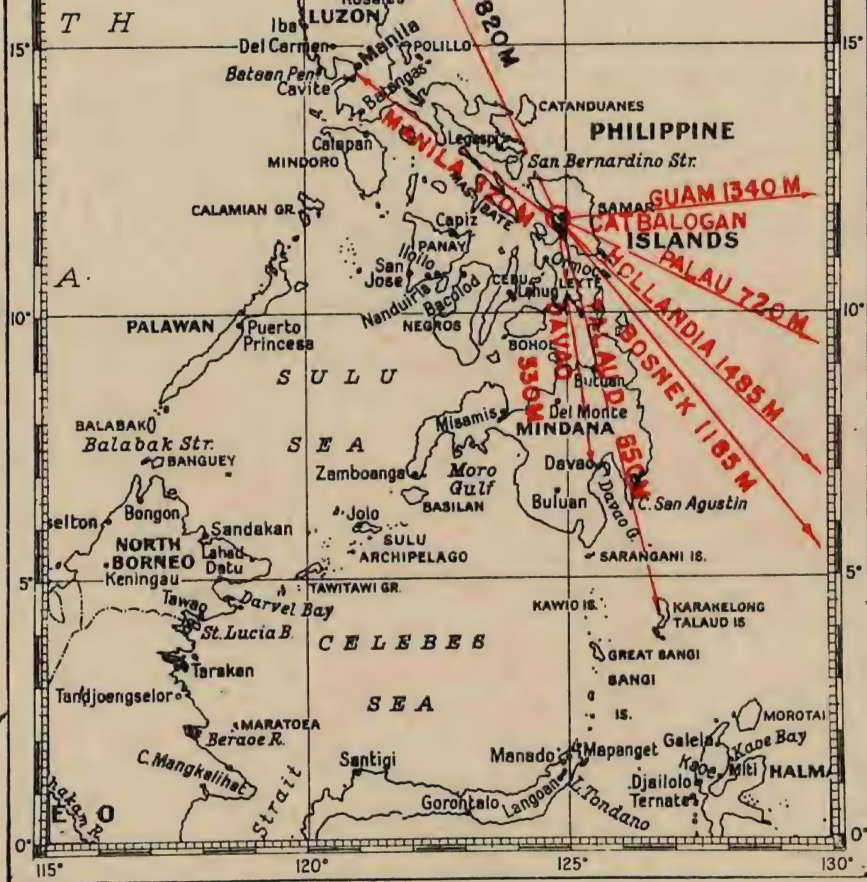




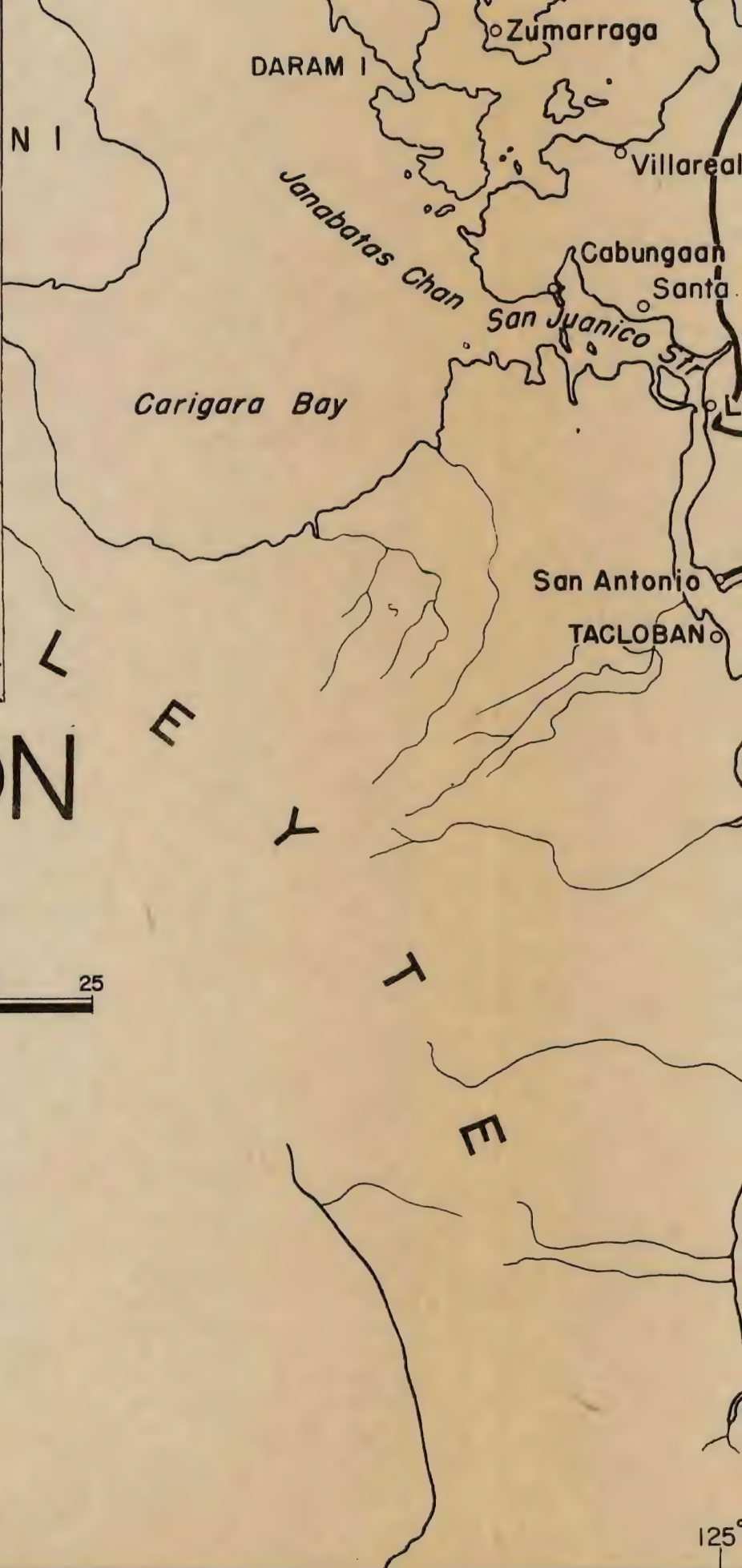
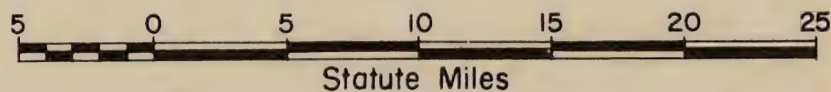








# ORIENTATION MAP









# TERRAIN STUDY

OF

## SAMAR PROVINCE

(Philippine Islands)

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### PART I—GEOGRAPHICAL INFORMATION

#### SECTION I—INTRODUCTION AND GENERAL DESCRIPTION OF AREA

##### 1. Area Covered (See Orientation Map):

The area covered by this Study is the province and island of Samar. It is the NE-most island of the Visayan Group in the Philippine Archipelago.

Samar Island lies between the 11th and 13th North parallels and the 124th and 126th East meridians.

Included also within the province are numerous smaller islands, the most prominent of which are Homonhon, Calicoan, Suluan and Manicani off the SE tip of the island; Daram, Buad, Parasan, and the Canahauan island group just SW of Samar; Tagapula, Almagro, Sto Niño, Camandan, Libucan, Dalupiri, Capul and the Naranjo Islands off the west coast of Samar, and the Balicuatro islands, and Laoang, Batag, Cahayagan, Biri, San Juan, Bani, Gilbert, Cabaun and Maravilla islands off the north coast of Samar. All of these small islands are treated as part of the text.

##### 2. Historical Reference:

Centuries ago Samar and Leyte were a single island known as Ibabao. During the 16th century this name was changed to Tangdaya and later to Cebu when that island became the provincial capital.

The southern half of this single island (now the separate island of Leyte) was more heavily populated than the northern half and was more developed agriculturally. Moro piracy along the coasts of these islands kept newcomers away and it is stated that the islands along the east coast of Samar were later fortified and used as bases from which the natives ultimately drove off the pirates.

In 1798, long after the single island of Ibabao had been divided into two islands by San Juanico Strait, the island of Samar became a separate province. In 1818 it had 27 recognised towns and villages and a taxable population of 57,922.

In 1939, the population of Samar had increased to 574,800, most of whom lived on the narrow coastal belt fringing the island.

##### 3. General Geographic Description:

Samar Island is the third largest island in the Philippine Archipelago (Luzon is largest, Mindanao next).

North of Samar lies the San Bernadino Strait, the most frequented route for large ocean vessels between North American ports and Manila. West of Samar is the island-studded Samar Sea connected to the waters of Leyte Gulf by the narrow, tortuous San Juanico Strait. South of Samar is the island of Leyte and the Leyte Gulf. Homonhon and Suluan Islands (Samar Province) are the only prominent land masses restricting the entrance to Leyte Gulf. Both of these islands are mountainous and generally untenable.

Along the east coast of Samar are many small islands and reefs which make this coast dangerous to shipping, particularly during the NE monsoon period when heavy seas, cyclonic winds and torrential rains occur. The approach to this coast is direct from the Pacific Ocean, however, and amphibious landings are possible in several small areas.

The island of Samar has little to offer geographically for a successful military operation. Control of the island can be limited to a coastal penetration of two or three miles, since the hinterland, though of no great height, is extremely rugged and heavily forested. There are no broad, fertile valleys on Samar, the longest level plain being that area extending along the north coast of the island from Lavezares to Laoang.

The largest rivers on the island are generally those flowing to the north and east, due primarily to the heavy rainfall on these sides of the island during the NE monsoon. Drainage of the island follows no definite pattern and nearly all rivers have many small tributaries and follow a winding course. There are several large



rivers navigable by launches for varying distances inland. In all cases, sand bars across these river mouths limit entrance to high tide for any boats larger than the smaller native craft.

Principal occupations were agriculture and fishing. The largest single enterprise on the island was the Samar Iron Mining Concession at barrio Pambuhan Sur, on the east coast of Samar at Matarinao Bay. Copra was the largest agricultural export, followed by fish, rice, *abaca*, corn and other garden produce. Due to the damage to crops by the NE monsoon, the agricultural development of the island has suffered. It is reported that there is considerable good timber in the inland areas of the island, but due to general inaccessibility and poor roads it has not been greatly utilized.

Although the road net on Samar was rather extensive it was poorly maintained and would not hold up long under heavy traffic. The east-west road across the centre of the island, from barrio Taft on the east coast to barrio Wright on the west coast, was only just completed when the islands were occupied by the Japanese. It is reported as being used by the Japanese, but no indication is given of its condition. Since most of the roads were only of dirt, or with a veneer of some surfacing metal, they would not stand up for long under heavy rains without considerable maintenance.

Although four airfields were located on the island, only two have any prospects of much development—those at Catarman on the north coast, and at Borongan on the east coast. Catarman is the principal town on the north coast and had an army cadre unit in conjunction with the airfield. Since Samar is located at the centre of the Samar typhoon track, any airfields on the island will be limited more or less to seasonal usage. During October, November, December and January, airplanes would be grounded much of the time.

Narrow, isolated coastal plains are the only areas which could be developed for airfield construction and these would be greatly limited as to the number of strips that could be built.

The islands of Daram, Parasan and Buad off the west coast of Samar Island were once surveyed by the US Navy as a base for naval operations on the inland waters of the archipelago. There are many small, deep water harbors in these islands which can be used as refuge by small vessels during storms. The islands generally, however, are hilly and not suited for any extensive shore installations.

None of the small islands included in Samar Province is suitable for military development for other than emergency use. Wide fringing, drying reef, extensive mangrove swamp, mountainous terrain or heavy forest, in varying combinations—and in some cases all inclusive—make all of the small islands undesirable sites for military operations.

There were no particularly large or important towns on the island. The capital, and one of the principal towns, is Catbalogan, on the east coast. The largest municipality is Basey on the south coast, whose principal exports were copra, rice and *abaca*. Basey was also noted for its fine "Panama" hats and native sleeping mats.

#### 4. Spelling:

The spelling of place names and physical features is taken from the following sources in the order of their appearance:

1. USC & GS Nautical Charts.
2. Census of the Philippines, 1939.
3. C & GS Map, Manila, PI 1:200,000, 1940, Samar.
4. Field Survey Sheets.

Spelling of names or physical features not appearing on 1 (above) is referred to 2. If the spelling is not in 2 (above) reference is made to 3, etc. Spelling of names or physical features not appearing in any of the above is taken from best authority.

#### 5. Time: Measurements: Currency:

*Standard time* is that of the 120th meridian, or 8 hours ahead of Greenwich Mean Time.

Basically all measurements are in the *metric system*.

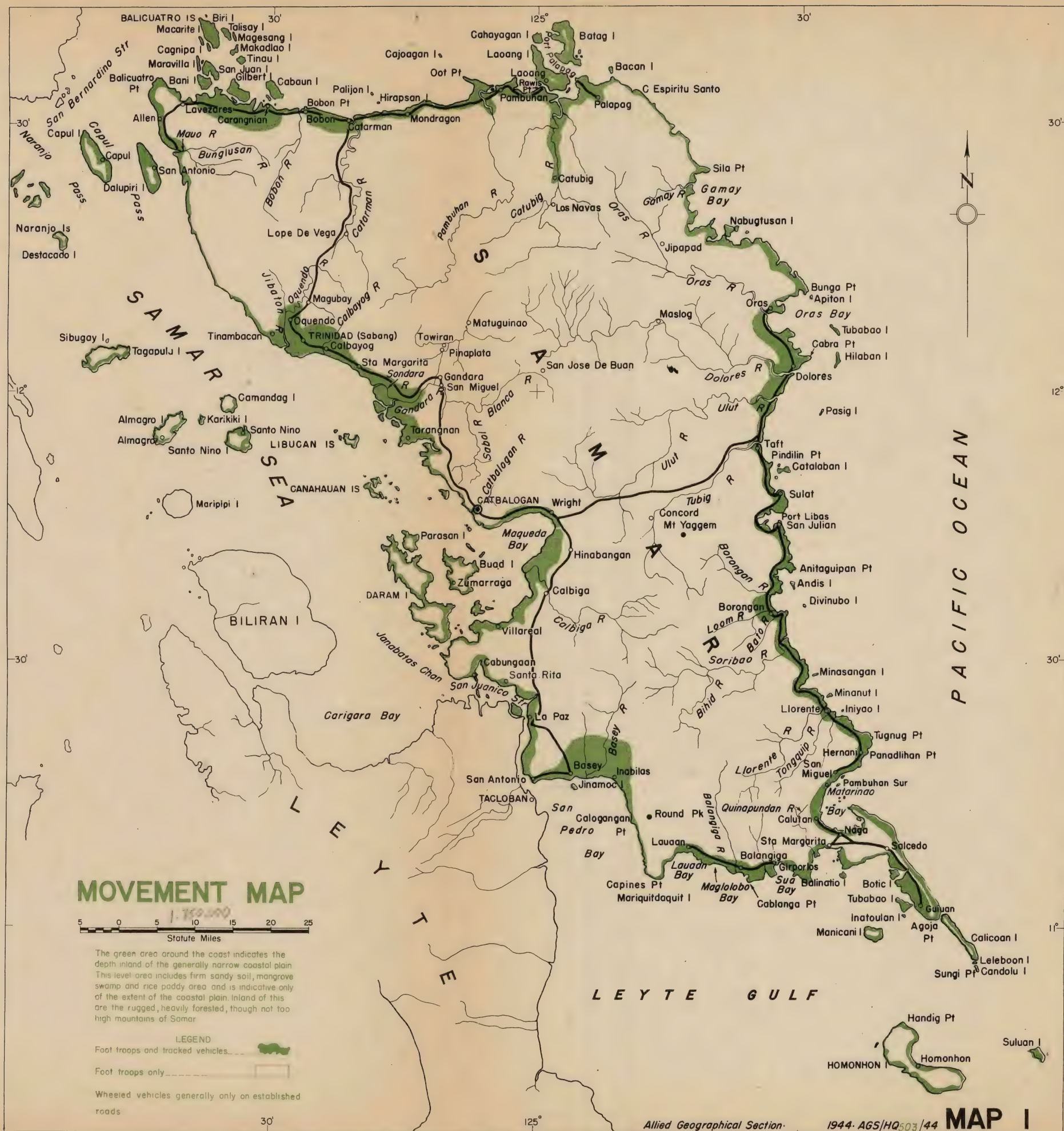
Available units, such as kerosene cans, coffee cans, etc., are used in various localities where standard metric units are unobtainable or scarce.

*Currency*: The peso is the main item of coinage. It is divided into 100 parts, centavos. Copper, silver and paper currency are used.

#### 6. Magnetic Variation:

Magnetic variation of Samar Island is from 1° 05' E (north end of Province) to 1° 30' E (south end of Province) with an annual increase of 0° 1'.





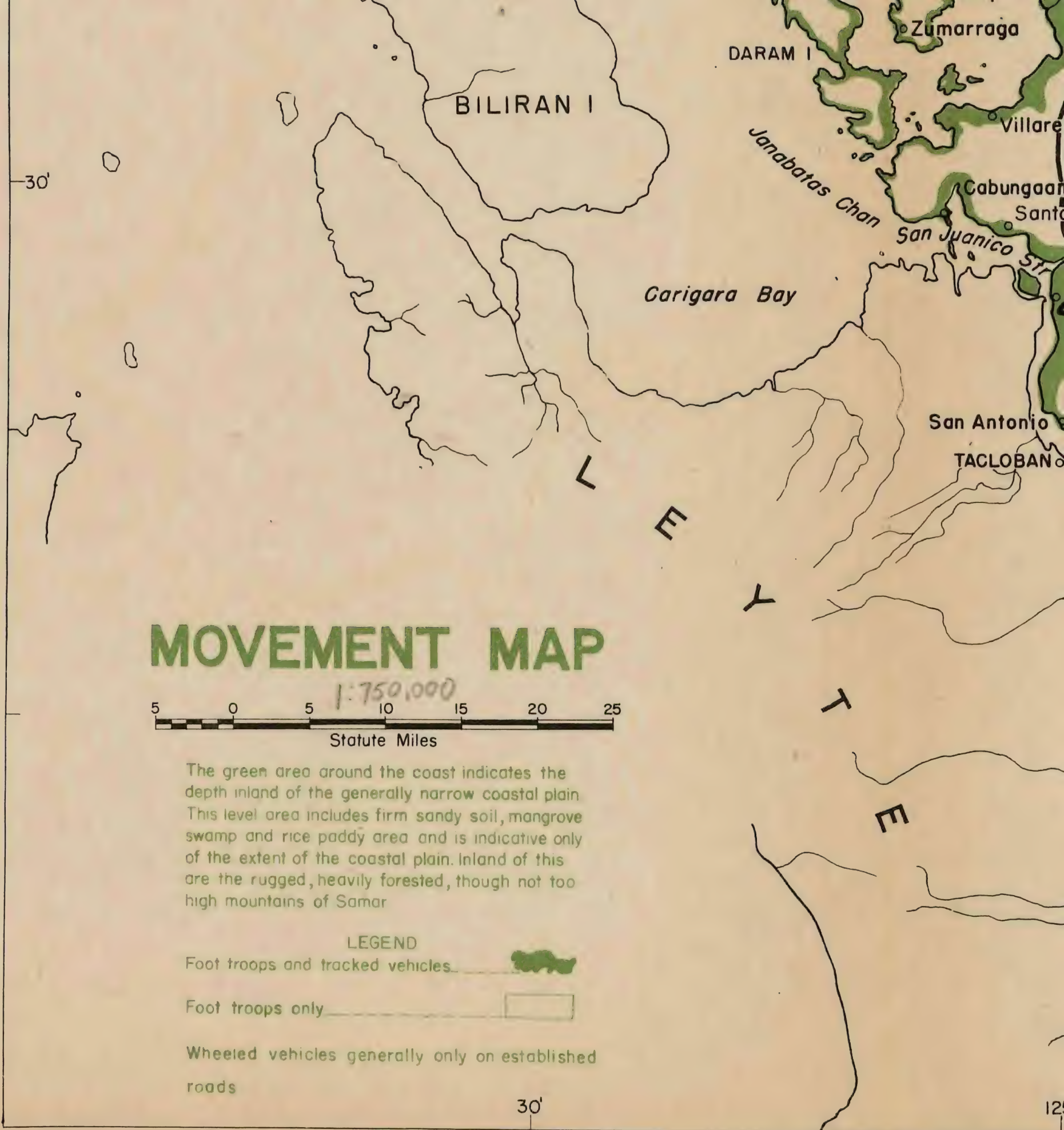


















## 7. Water:

Adequate water is available on Samar at all times. As much as 160 inches of rain per annum falls at places along the east coast, and the overall average for the entire province around 140 inches per year. Because the interior of the island is sparsely populated, unpolluted water should be available from many of the streams and rivers. Tests must be made of all water intended for drinking, however, and where in doubt water should be boiled. Shallow wells and artesian wells, as well as the streams and rivers, furnished the drinking water for most of the barrios and towns.

## 8. Maps and Charts:

Maps and Charts used in the compilation of this Study are listed below.

USC&GS Nautical Charts Nos. 4220, 4418, 4420, 4421, 4422, 4423, 4440, 4449, 4464, 4467, 4719.

These charts are based on surveys made from 1902 to 1940 and are corrected for dangers, lights, buoys, and beacons in most instances to mid-year 1941.

Maps used include the C&GS, Manila, PI 1:200,000, 1940 Topographic map of Samar; AMS. 1:500,000, 1943 Philippine series, San Bernardino Strait and Leyte. Island sheets. This latter map is based on the USC & GS Nautical Charts and the C & GS Manila, PI 1:200,000 map of Samar as well as other official Philippine government agencies publications.

The RAAF Aeronautical Map 1:1,000,000 Aug 1943, Sheet NC-5, based on the above sources, was also used in compilation of maps included.

Additional maps, based on all of the above sources have been prepared by Allied Geographical Section and are used in this Study.

□   □   □

## SECTION II—MILITARY IMPORTANCE

(See Map 1.)

### 1. Significance:

Samar Island although possessing no high mountains or ranges, presents one of the most difficult terrain problems of all of the islands in the Visayas. It has been the most undeveloped as it has little to offer agriculturally, and its mining concessions except one, have not been wholly successful.

Unlike most of the other islands, Samar has no broad valleys or extensive level plains. Movement over land is limited to its road net, and in areas even this was so bad that natives found it easier to use water routes. Such small river valleys as do exist are winding, and heavily overgrown with forest. Only one river, the Catubig, can be considered navigable for any distance for any but small launches and native craft.

By far the greatest number of the population live within five miles of the coasts. Such people as do live in the interior are inclined to be unfriendly and live a definite tribal life, producing only enough *abaca* or produce to trade with the coastal natives for salt, their most desired possession.

Large sections of the coastline, particularly along the east and south coasts, are badly encumbered with reefs and shoals and most shipping gave these areas a wide berth. Generally, the rugged hinterland extends to the coast so that even if beach landings were successfully made, movement inland might be stopped.

Most desirable areas for military development are the north and east and west coasts and some of the provincial islands off the west coast. Samar Island has the advantage of fronting on both the Pacific Ocean and the enclosed waters of the islands.

But for the main drawbacks of the islands—poor communications and hazardous weather—Samar Island might be the most important island from which to launch a combined attack against the main island, Luzon, bringing supplies direct to the east coast by ship and transporting them across the island to operating bases along the west coast.

### 2. Military Development:

The pre-war military development of Samar Island was limited to four Cadre Training centers and the local Constabulary.

The Cadre Training centers were located as follows:

Two in Catbalogan;

One in Catarman;

One in Borongan.

A short survey was made in 1938 by the 16th Naval District with a view to use of the islands off the west coast of Samar as a naval operating base. Plans were made



for basing facilities for destroyers, submarines and light cruisers, as well as for hospital installations.

Greatest handicap to development of these islands is the lack of fresh water, due to short streams which dry except during rainy seasons. Almost complete absence of natural resources would also necessitate much shipping.

There is good anchorage and approach to the shores. Most desirable islands are Daram, Parasan and Buad, which are grouped closely enough to afford mutual protection.

The Japanese have made little attempt to develop Samar. Aside from token forces in the larger towns around the coast, Japanese activity has been confined mostly to bleeding the island of its rice. The road from Dolores to Taft on the east coast, and then across the island to Wright, has been maintained for the trucking of rice from the east coast to garrisons along the west coast and to Tacloban.

No air activity has been reported on Samar, although at one time laborers were working on the Calbayog Airfield.

### 3. Potential Development:

There has been little military development on Samar. Aside from the naval survey (Sub-Sec 2, above) no other plans were made before the war for establishing military installations on the island.

The following characteristics of the island are to be considered for and against prospective development on Samar:

*For:*

- a. Easily approached from the Pacific Ocean.
- b. Geographical relationship of Samar to important Luzon.
- c. Control of San Bernadino Strait.
- d. Lack of any present Japanese defences on Samar.
- e. Abundance of natural resources.

*Against:*

- a. No extensive level areas for development.
- b. Poor weather conditions.
- c. Lack of suitable existing communications.
- d. Rugged, heavily forested hinterland.

### 4. General:

#### *a. Approaches:*

Aside from the islands of Mindanao, Siargao and Bucas Grande, the eastern coast of Samar is the most easterly land mass of the Philippine Archipelago. The water off this coast is very deep and no dangers are encountered until within 20 miles of the coast.

From the north, the island is approached directly from San Bernadino Strait, and Leyte Gulf offers easy approach from the south. The most inaccessible coast is the western which can be reached only by passing through narrow, easily-mined or guarded water passes.

#### *b. Cross-Country Movement:*

Movement by MT on Samar generally is limited to the existing road net. Portions of the firm sand beach along the north coast would undoubtedly support MT, although no verification of this has been obtained. Along some of the narrower roads, buses and trucks, before the war, frequently had to pull off the road to permit other vehicles to pass.

Biggest hindrance to cross-country MT travel is dense underbrush and forests and rugged, steep-sided hills. Wherever the terrain is open, *cogon* grass country, MT should be able to proceed overland. Samar is well drained and the soil is firm, except for coastal areas around river mouths and low areas along the west coast, particularly San Juanico Strait.

Much the same conditions would limit the movement of tracked vehicles, although their sturdier construction would permit their advance through underbrush and small trees that would stop MT. Again, however, the rugged country is an obstacle.

Troops on foot, individually or in small patrols, can range much farther over the interior than can MT or tracked vehicles. Mass movements of troops seem impossible for other than limited distances, except along certain coastal sections or along the established road system. Winding rivers will present fording problems, because during the rainy seasons they are wide and swift. Patrols should use a friendly native guide whenever possible. He not only knows the native trails and short-cuts, but could protect unfamiliar troops against dangers of the jungle.

#### *c. Weather:*

Samar has no dry season and it has a pronounced maximum rain period from October through February. At Borongan, on the east coast, the yearly rainfall



averages 165 inches. The west coast has less rainfall, but the over-average for the island is still about 140 inches a year.

Cloudiness is relatively high in all months, averaging between six and seven-tenths a year with a maximum during July, August and September when great cloud banks accumulate.

Visibility along the east coast of Samar is poor during the NE monsoon period because of heavy rains and low hanging clouds. Fogs are rare.

Winds frequently reach gale ferocity and unheralded typhoons do much damage to crops and installations.

*d. Beaches:*

Such beaches as do exist around Samar are mostly on the north and east coasts, with only small scattered beaches along the west coast. Little attention was paid to beaches by visitors to Samar before the war, hence, first-hand information about the suitability of beaches for landings is lacking. It is known, however, that natives, so dependent on transportation by water, always selected coastal locations for their barrios where they could draw their craft out of the water on a firm, sand beach. When loading their craft with produce for trading, they would anchor it out about waist depth and carry their cargo on their backs out to the boat.

*e. Vulnerability:*

Any landing on Samar, particularly along the north coast, would normally draw strong air resistance from nearby Luzon.

The small islands of the Samar Sea offer small natural harbors for the operation of naval craft such as PT boats and small submarines. Shipping in the Samar Sea would undoubtedly be harassed by both air and surface craft as well as by submarines.

**5. Direct Distances to Bases** (From Catbalogan): (Approx only).

Enemy	Statute Miles	Geographic Miles	Friendly	Statute Miles	Geographic Miles
MANILA	320	278	PALAU	725	630
DAVAO	330	287	BOSNEK	1185	1030
TALAUD I.	550	478	GUAM	1340	1165
TAINAN			HOLLANDIA	1485	1290
(Formosa)	820	714			

□ □ □

**SECTION III—OFFSHORE CONDITIONS AND OFFLYING ISLANDS**

(See General Map and Chart)

**1 General:**

Two factors limit the good sea approaches to Samar Island. One of these is bad weather, and the other is numerous reefs and shoal water. This reef condition is fairly general around the whole of the island, but is most pronounced along the eastern and southern coasts. In many instances dangerous reefs are extensions of long shelves which also include numerous small islands.

Samar Island is situated on one of the principal submerged shelves of the Philippines, the Leyte-Samar shelf. It extends in a broad bench from Pandan Point (SE Leyte) around both the Leyte and Samar shores of Leyte Gulf, narrowing to a width of a few miles at the Pacific entrance to Surigao Strait, but expanding to embrace Dinagat Sound and the Dinagat-Siargao Islands off NE Mindanao. The bank has an average depth of 22 fathoms. Its eastern edge descends precipitously into the Philippine deep.

Samar Island is bordered; on the north by San Bernardino Strait and the Pacific Ocean; on the east by the Pacific Ocean; on the south by Leyte Gulf and Leyte Island; and on the west generally by the Samar Sea.

The following description of offshore conditions begins at the NW corner of Samar Island and proceeds clockwise around the island. All depths are given at LW unless otherwise stated.

**2. North Coast** (Photos 1, 2, 3; USC & GS Charts 4220, 4421, 4440, 4449).

From Balicuatro Point (12° 35' N, 124° 17' E) the coast trends in a general easterly direction for about 50 miles to the eastern entrance to Port Palapag and is faced by numerous islands, banks, and shoals.

BALICUATRO ISLANDS are a group of islands lying off the NW part of Samar. Biri Island is the largest of the group and is hilly and heavily overgrown.



A coastal plain around the northern end of the island produces some copra and the inhabitants of the small barrio, Biri, are principally engaged in collecting copra and fishing.

Except at barrio Biri, the island is reef-bound. In fact, on the east side of Biri Island the reef is so extensive that at low water (LW) it is possible to walk to the neighboring islands of Talisay, Magesang, Makadlao and Tinau. A rather deep (7 - 19 fathoms) channel separates Biri Island from Macarite and Cagnipa Islands. The shores on all three islands bordering this small channel are heavily encumbered with mangrove.

None of the islands of the Balicuatro group has any military significance beyond a possible site for patrol lookouts, or a possible site for aircraft detection equipment. Biri Island is the most accessible and best suited for any installations which might be planned. It is roughly  $4\frac{1}{2}$  miles long by two miles at its widest point.

SAN JUAN, BANI, NAGNASA, ELONBACHID and MARAVILLA Islands are a group of five just south of the Balicuatro Group. They are so heavily wooded that they appear as one island. San Juan and Bani are the only two islands of the group that are separated at all tides, the others being joined to San Juan by drying reef. The interior shores of the islands are largely mangrove swamps. Bani Channel, between Bani Islands and Samar Island, is sometimes used by coastal vessels. There are two small shoal areas west of Bani Island that must be avoided when using Bani Channel.

COCONUT ISLAND is a very small, mostly mangrove-covered island  $2\frac{1}{2}$  miles west of Bani Island and lying close to the north shore of Samar. A narrow belt of coconut-planted ground surrounds the west, south and east shores of the island. A large reef projects off the NW coast of the small island.

GILBERT ISLAND is a large island separated from the main island of Samar by a very narrow channel. The island has extensive mangrove swamps surrounding it and the hinterland is heavily wooded. A small barrio, Buenavista, is on the extreme southern tip along the channel. A small dock was used for loading copra to inter-island coasting vessels. Drying coral reef surrounds the island except at Buenavista.

GREEN ISLAND is a small island about 100 feet high lying between Gilbert and Cabaun Islands. It is surrounded by a reef and north and east of it the ground is foul.

FOOT ISLAND, between Ugamut Island and Samar, is a small low island and is surrounded by a reef. There is a number of dangerous detached reefs between it and Green Island.

UGAMUT ISLAND is a small, low, mangrove-covered island lying close to the SW side of Cabaun Island, from which it is separated by a narrow impracticable channel. The region NW of Ugamut is full of reefs.

BAT ISLAND is a small, low island surrounded by a wide reef lying between the south end of Cabaun Island and Samar. Vessels using Carangian Channel usually passed to the north of Bat Island.

CABAUN ISLAND is the most easterly of the islands in this vicinity and is almost covered with mangrove swamp. It is surrounded by drying reef and is dangerous to approach.

Coastal vessels proceeding along the north coast of Samar frequently used Carangian Channel and Biri Channel to escape high seas. A small anchorage area SE of Biri Island, called Biri anchorage, was frequented by small vessels when caught in this vicinity during bad weather. The largest vessels can use Biri Channel, but must stay north of Cabaun Island because of many dangerous reefs in the Carangian Channel.

FITZGERALD BANKS, WRIGHT SHOAL, FISHER SHOAL, MAGURAN REEF and CATARMAN SHOAL, are all offlying dangers between the Balicuatro Islands and Catarman which must be avoided by large vessels. All of these dangers are covered in the Coast Pilot and on USC & GS nautical charts 4220 and 4440.

PALIJON ISLAND and HIRAPSAN ISLAND and their connecting reef lie NE of Catarman and about two miles offshore. Palijon Island is a mangrove swamp, all of the ground being covered at high tide. Hirapsan Island is densely covered with tall trees which make it appear higher than it is. Both of the islands are completely surrounded by a wide, drying reef.

Between Hirapsan and Palijon Islands and Bugko Point on Bantayan Bay are numerous, small, reefs and shoals best located by reference to USC & GS chart 4421. Among them is a small island called Coral Island. It is bare and has no importance.



CAJOAGAN ISLAND is small, and lies about three miles NW of Oot Point, the east entrance to Bantayan Bay. It is surrounded by a reef beyond which shoal water extends one mile from the island generally in a northerly direction.

Out from Laoang Bay about six miles in a NW direction is Villalobos Reef with a least depth of  $4\frac{1}{2}$  fathoms.

A large detached reef, bare at LW, lies with its northern extremity  $1\frac{1}{4}$  miles NW of Livas Point, the western entrance to Laoang Bay.

CAHAYAGAN ISLAND is separated from the large Laoang Island by a channel with a least depth of  $3\frac{3}{4}$  fathoms and is too narrow to be navigated by other than launches. The island has one barrio, Cahayagan, from which limited quantities of copra were shipped. The island is covered with dense growth and surrounded by a coral reef.

LAOANG ISLAND is the second largest island in the group lying off the NE part of Samar. It is rather heavily wooded and has several small barrios, the largest of which is Laoang, the municipal governmental seat. The principal export of the island is copra, taken mainly from the coastal areas. The road along the north coast of Samar terminated at a ferry stop opposite Laoang. Laoang Island is relatively reef-free around its southern end, but shoal water is rather extensive. A small boat channel followed along both the SE and SW sides of the island leading to Catubig River on Samar.

The northern tip of the island is low and surrounded by a narrow reef. The southern end of the island has some high ground and one medium-sized river, the Cagaasan. Barrio Laoang is large (for the size of the island) and lies along the SW side of the island.

Laoang Island is separated from Batag Island by Port Palapag, a good, protected, but somewhat reef-encumbered anchorage. Navigation of this waterway involves local knowledge.

DARANASAN ISLAND is a small mangrove and forested island formed by the delta of Catubig River. The passage between Daranasan and Laoang Island should not be attempted without native assistance. Daranasan Island is not believed populated.

BATAG ISLAND is the largest and most easterly of the islands forming Port Palapag. It is surrounded by reefs and shoal water and is heavily wooded. The large bay on the west side of the island is nearly blocked by reefs. Batag Light, 313 feet above HW, is located centrally on the northern half of the island and is visible 25 miles.

BACAN ISLAND lies close to the Samar coast, about two miles eastward of the east entrance to Port Palapag. It is generally low and wooded, except near the centre, where there is a tree-covered hill 170 feet high. There are two shoals, with two and four feet of water at LW, in the middle of the entrance between Bacan and Palahan Islands. About two miles northward and  $1\frac{1}{4}$  miles NE of Bacan are rocky patches with four and five fathoms respectively. About  $2\frac{1}{2}$  miles eastward of the north end of Bacan Island and about three miles eastward of the south end of the same island, are banks with least depths of six and eight fathoms, respectively.

With the exception of the shoals and banks described above, the NE coast of Samar from Bacan Island to Sila Point is clear and can be safely navigated at a distance of one mile.

### 3. East Coast (Photos 4, 5, 7, 8, 9; USC & GS Charts 4421, 4422, 4423, 4467)

From Sila Point ( $12^{\circ} 24' N$ ,  $125^{\circ} 20' E$ ) the coast trends generally SE to Bunga Point ( $120^{\circ} 11' N$ ,  $125^{\circ} 31' E$ ) and thence south to Sungi Point, the southernmost tip of Samar Island.

GAMAY BAY is full of shoals and reefs and is dangerous to navigate. Gamay Bay can be best entered from the south, but strangers to the area are advised to give the bay a wide berth. Details of the reefs can be obtained from USC & GS chart No 4421.

LABUNGLAION, CANABAYON, BINARAYAN, NABUGTUSAN and HINI-NATUNGAN are small islands in Gamay Bay.

APITON ISLAND is a small island out from the north entrance of Oras Bay. It is densely covered with coconut trees except on the high, rocky SE end where other trees prevail. It is surrounded by a large reef, on which, eastward and southward of the island, are many large, prominent rocks. Off the SE point of the island there is a prominent rock, 63 feet high, which is steep-to on its southern side.

A shoal with a least depth of  $3\frac{1}{4}$  fathoms is about midway between Apiton Island and Tubabao Island in the outer northern entrance to Oras Bay.



UGIS ISLAND is a small reef-bound island near the south inner entrance to Oras Bay.

TUBABAO ISLAND is the northernmost of a group of islands extending south from Oras Bay to the mouth of Ulut River. These islands lie in a N/S direction on the western edge of a great reef beginning about 2½ miles S/SE of Apiton Island and extending about eight miles southward. The reef is very narrow at the north end and gradually widens until it reaches more than a mile eastward and SE of Fulin, the southernmost island of the group. This reef, bare at LW, protects a large area of water and coast from easterly seas and affords a smooth passage, between the reef and Samar.

The islands on this reef are in order from north to south, Tubabao, Luctaban, Nabalacad, Kaybani, Cancalinibing, Hilaban, Mugtma, Sibay, Baohan, Linao and Fulin. They are planted with coconut trees, and Hilaban Island has a large village on its southern tip that offers protected anchorage for small boats in a narrow channel.

PASIG ISLET is a very small crescent-shaped islet located on a large drying coral reef over a mile in diameter and about three miles SSW of Fulin Island. The hull of a large vessel stands on the NE edge of the reef and marks it prominently.

MAKATE, MACALAYO, CATALABAN and ANAJAO are a group of islands off the entrance to Sulat Bay.

These islands are each surrounded by reefs, leaving only narrow, shallow boat channels between them and the coast of Samar. Catalaban, the largest of the islands, has a small village, San Vicente from which small quantities of copra were shipped. All of the islands have coconut trees on them and are fringed in places with mangrove.

Taig Point, forming the southern shore of Sulat Bay, has a coral reef extension, dry at LW, on which are located four very small rocky islets. The names of these islets are AGAUAN, INAYAUAN, KAPAPARIUAN and POPOTIHON.

From Taig Point south to Andis Island there are no offshore dangers and vessels can sail safely within a mile of the shore. Much wider berth must be given to the whole east coast, however, during the NE monsoon period.

ANDIS ISLAND is a flat, coconut-planted island just out from the northern entrance to Port Borongan. Vessels anchor to the lee of Andis Island during the NE monsoon months when calling at Borongan.

DIVINUBO ISLAND occupies a similar position off the southern entrance to Port Borongan that Andis Island does to the north. A light is located on Divinubo Island for vessels approaching Port Borongan. Divinubo Island is connected to the mainland by a reef that dries at HW. Several small islets are located on this connecting reef, the largest of which is called Coco Islet.

MAIDUUN and MINASANGAN ISLANDS are two small islands north of Cabay Bay lying on the large drying reef that forms the shoreline along this coast. Both are mainly mangrove covered.

MINANUT ISLAND, south of Cabay Bay, is separated from the coast of Samar by a narrow deep channel which is not recommended as a passage for any but small launches. The island is coconut-covered, and the north and NE faces of the island consist of perpendicular cliffs nearly 100 feet high. To the SW of the island is a small deep-water anchorage.

INIYAO ISLAND is a small island lying on a reef projecting out from Samar SE of Llorente.

Again the coast of Samar is free of offlying dangers for several miles down to Matarinao Bay.

Matarinao Bay is full of shoals, islands and reefs. Reference is made to the US Coast Pilot and USC & GS charts No 4423 and 4467 for navigational data.

ANAHAO ISLAND, in Matarinao Bay, is low and swampy but does support a landing field (See Sec XI, Operational Airfields, Anahao A/F).

The coast, from Matarinao Bay south to Calicoan Pass, is free of any offlying dangers and can be safely navigated a mile from the shore.

CALICOAN, LELEBOON and CANDOLU are three islands lying on a large coral shelf which is a prolongation of the narrow peninsula that forms the SE tip of Samar Island.

CALICOAN ISLAND contains a ridge of hills, averaging 250-300 feet in height, extending the length of the island. The bluff facing Calicoan Pass is nearly vertical, but soon loses this appearance and changes into moderate slopes. Along the eastern face of the island for 2½ miles SE from the pass there is no shore reef, and



the shoreline is formed of coral rock about 20 feet high. From here a fringing reef begins which extends along the remainder of this island and all of the eastern coasts of Leleboon and Candolu Islands, gradually widening to half a mile and continuing around Sungi Point into Guiuan Bay. There are several small barrios on the west coast of Calicoan Island from which copra and fish were exported in limited quantities.

LELEBOON ISLAND had a small barrio from which copra was exported. This island had a 200ft peak and was heavily wooded.

CANDOLU ISLAND is the southernmost island of the group and was also heavily wooded with a 188ft peak at its northern end.

**4. South Coast** (Photos 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21; USC & GS Charts 4420, 4423, 4464)

SULUAN ISLAND lies 10 miles SE of Sungi Point. It is the best landmark to make for when approaching Surigao Strait from the Pacific. It is a high island (410ft) at the southern end of the east coast and has two coconut-planted coastal plains. Barrio Granadas lies on the west coast at the head of the only protected anchorage harbor around the island. This harbor is formed by two large, drying coral reefs that project out from the western shores of the island. Small boats can beach on the island at Granadas and for a short distance along the coast north of Granadas. This is the only place suitable for landing on the island.

Small quantities of copra were shipped from this island, but its main importance is as a bearing for large vessels approaching San Bernardino Strait. A navigation light is located at an elevation of 438 feet on the southern end of the island and is visible for 28 miles. It is a flashing white light.

HOMONHON ISLAND is a large crescent-shaped island about 14 miles due south of Guiuan, Samar. Very little information is available about this island since vessels rarely stopped there and the only communication with the mainland was by native boats. The population of Homonhon in 1939 was 1825.

Principal value of the island lies in its coconut-fringed coasts. The largest town on the island was Homonhon, on Casogoran Bay. Small quantities of copra were shipped by native boat from the various small barrios around the coasts to Guiuan on Samar. The island generally is high and very rocky. The hills and mountains are heavily forested and many large trees have been broken off by strong monsoon winds, making penetration through these forests difficult.

The whole of the island is fringed with coral reefs. These reefs vary in width from 50 yards to 600 yards in places. There are no suitable landing beaches although at HW native boats beach at Homonhon and other barrios around the coast. Deep-water anchorage is available anywhere around the island within a mile of the shore. There are no sheltered bays or ports. Best anchorage in the vicinity of Homonhon Island is SE of a small islet called Montoconan on the NW shore of Homonhon Island. There is no possible landing beach in this area however, due to wide drying reef and mangrove along the coast. The narrowest reef is found along the SW side of Homonhon Island. This shore of the island also has the largest level coastal plain. This coastal plain is from one half to three-quarters of a mile in width and extends from Kanaoayong Point, midway on the SW side of Homonhon, around to Colasi Point on the southern coast of Homonhon, a distance of about 6½ miles. This area is heavily planted with coconut trees and other timber and scrub growth.

There are no roads on the island. There are no trails leading from the coast inland. Such trails as do exist follow the coastline. There is possibly a trail leading from Homonhon across the middle of the island to the barrios along the SW coast of the island. The NW end of the island is quite high, with two peaks of 1120 feet and very steep drops down to the coast. The southern end of the island is not quite so high (approximately 700ft) with some gradual slopes to the narrow coastal plain.

Homonhon Island is not protected from the NE or SW monsoons or the trade winds between these two periods.

The southern coast of Samar Island, from Sungi Point to Capines Point is the most reef-bound and shoal-encumbered section of the island. Dangerous offshore hazards are too numerous to describe here. (See USC & GS chart No 4423 and Map A in Sect VI, "Coastal Description." The *Coast Pilot* lists the aids to navigation in this area.

Just west of Guiuan Peninsula are four fairly large coconut-covered islands which are insignificant since none of them can be approached by boat. These are MANICANI, TUBABAO, BOTIC and BALINATIO Islands. The largest of these islands is Manicani which also has a greatest height of 534 feet.

Several smaller named islands are in this area but are totally insignificant.

CAPINES POINT is the eastern entrance to San Pedro Bay, the largest bight in the southern coast of Samar.



SAN PEDRO BAY, though definitely navigable, and the best passage to Tacloban on Leyte Island, as well as the approach to San Juanico Strait, is full of small shoals and reefs, so spotted throughout the bay as to make navigation difficult. (See Chart 4423.)

JINAMOC ISLAND, in San Pedro Bay, just off the coast at barrio Basey, is a low, rolling island with several small barrios around its shores. From a distance it appears level and heavily forested; on close inspection it is found to have several large open areas, mainly on the northern end, and to be quite hilly. It can only be approached at HW by any but shallow draft boats. It has a navigation light, used when approaching or leaving San Juanico Strait.

San Juanico Strait is the narrow tortuous pass between Leyte and Samar Islands. Opinions differ, even among skippers who have navigated the channel, as to the largest vessel that could safely proceed through the strait.

The strait is about 12 miles long in a general N/S direction and has an average width of from a quarter to half a mile. The navigable channel is reduced to barely 200 yards in two places. Its depth varies from  $3\frac{1}{2}$  to 23 fathoms. The strait is full of small islands and reefs. (For more details concerning the coast of Samar along San Juanico Strait see Section VI, Description of Coasts and Beaches.)

**5. West Coast**—south to north, (Photos 23, 25, 26, 27, 28, 29, 30, 36; USC & GS Charts 4420, 4418, 4220)

Three small islands and several smaller islands lie off the coast of Samar just north of Janabatas Channel, the northern entrance to San Juanico Strait.

The larger islands are Parasan, Daram and Buad.

These three islands, surveyed by the 16th Naval District in 1938-1940, were found to have several disadvantages as a Naval Base, the most important being—

- a. serious lack of fresh water on all three islands;
- b. rough, broken, terrain;
- c. lack of adequate construction materials;
- d. no road communications.

Among the desirable features are:

- a. Protected deep-water anchorage.
- b. Deep water close to shores.
- c. Multiple entrances to strategic water areas.

PARASAN ISLAND is on the NE side of the largest island of the group, Daram. It is a reef-free island with deep water close to its shores. It is separated from Daram Island by a very narrow,  $2\frac{1}{2}$  fathom deep channel. On its northern side an unusual peninsula projects northward, joined to the island by a thin isthmus. The island is relatively high, rising abruptly from its shores to a more or less level plateau from which the ground then rises gradually to its prominent peaks.

The most important barrio is Parasan, in Parasan Harbor, on the south coast of the island. Vegetation is sparse and scrubby.

Good landing beaches are reported at barrio Parasan and at barrio Rizal on the north coast. There may be additional good landing beaches at the heads of several of the small bays and harbors that dot the coasts.

DARAM ISLAND is the largest island of the group. It is almost divided equally as to area by a narrow isthmus. Both sections of the island are high and sparsely covered with poor timber forests. Many bald areas are visible. The shoreline of the island is very irregular, being cut up by small bays and inlets. In some of these can be found good seasonal anchorage.

The northern half of the island is more reef-free and steep-to than the southern half. All around the island can be found numerous unimportant islets lying close to the shore.

Daram Channel, which separates Daram Island from Samar Island, is narrow and has a controlling depth of three fathoms for vessels desiring to use it as a passage.

Zumarraga Channel, between Buad and Daram Islands, is deep, and a good anchorage for large vessels.

There are a number of small barrios on Daram Island at which launches from Tacloban (Leyte) and Catbalogan used to call regularly.

Daram is too hilly and rugged to be of much importance militarily. It might, however, serve as a base for aircraft detection equipment or a radio station. Some of its small bays might also be used as bases for small naval craft.

BUAD ISLAND is the most heavily forested of the group. It is high and rugged and not well suited for military development. The southern and eastern shores of the island have considerable shoal water and can only be approached by small boats at LW. At HW landing craft could beach with no difficulty.

There is one fair-sized village on Buad Island, Zumarraga, which is also the municipal seat of government for these islands. Zumarraga in 1939 had a population



of 21,225, with 2782 in the *poblacion* proper. It also had a good concrete pier, radio station (to Cebu only) and municipal schools. The pier is 520 feet long and 20 feet wide and was constructed by the Government.

Zumarraga Channel is deep and offers good anchorage. Buad is the only island of the group which large steamers could completely sail around. Along the northern and eastern coasts are many small beaches which have deep water close in. Generally the good beaches will be the sites of small coastal barrios.

Of the island group generally, the following information was obtained by the 16th Naval District Survey.

a. Inhabitants are mainly Visayan and, with few exceptions, do not understand English or Tagalog. There are a few Chinese merchants in Zumarraga.

b. Labor is unskilled (mostly fishermen) and limited in quantity.

c. Industries are mainly fishing and the drying of fish for sale.

d. Hardly enough corn, rice, camotes and casava can be grown to support local inhabitants. Food had to be brought in to Zumarraga.

e. There are no forest products.

f. Believed to be small deposits of iron ore on Parasan Island.

g. Only manufacturing was the construction of *bancas* (native boats).

h. No American or foreign-controlled enterprises.

i. The islands are mountainous and small with no rivers and few streams. Water at Zumarraga came from six shallow wells. A rain water cistern, at the time of the survey, was dry.

j. Zumarraga Channel does offer good protected anchorage for an area of about 10 square miles.

k. Rainfall appears to be less heavy than at Tacloban (Leyte) or Carigara (Leyte). Typhoons, of a more or less severe character, occur yearly.

l. No telegraph, but a radio station of 63 meters was located at Zumarraga in communication with Cebu only.

m. Good concrete pier at Zumarraga, 520 feet by 20 feet.

n. Dried fish is the principal export. Some corn was shipped from Daram to Cebu. Small inter-island steamers travel daily between Catbalogan, Zumarraga and Tacloban.

o. The main street of Zumarraga is paved for about half a mile with asphalt macadam for a width of nine feet. A water-bound macadam road extends across the isthmus at Zumarraga for about one kilometer. There are no other roads on the islands.

p. The important buildings at Zumarraga consist of:

Fish storehouse 75ft x 250ft

Church 75ft x 200ft

Presidencia 70ft x 70ft

Five small schools

Concrete cistern 20ft diameter.

q. Malaria, dysentery and beri-beri are present. Sanitation is primitive throughout area.

r. Most important personage in area is wireless operator and postmaster at Zumarraga.

s. Tides believed to be about five feet.

t. Area believed to have less rainfall than west coast of Samar.

u. The soil throughout the area is generally clay, mixed with varying amounts of sand. Rock will probably be found if deep excavations are required. The gullies on the islands and the valley north of Zumarraga are thickly overgrown with bamboo and dense tropical vegetation. The higher plateaus are covered with *cogon* grass. In general, soil will carry foundation loads of two to three tons per square foot.

v. Fresh water is seriously lacking.

GUINTARCAN and LAMINGAO are islands in Villareal Bay. They are completely surrounded by shoal water; any low areas are coconut-planted.

Laguinit Bay, Villareal Bay, and Maqueda Bay are three bights in the western coast of Samar Island opposite Daram, Buad and Parasan Islands. They are full of shoal water and for more than half their area are not navigable to other than launches and native craft, and at LW are not navigable for any boats for the remaining area. The condition can best be appreciated by reference to USC & GS chart 4420. (See also Map 6 in Sec VI, "Coastal Description").

MAJABA and BASIAO are two high islands with prominent white cliffs surrounding them. They are part of the Daram Group and are of little importance.

DARAJUAY, LITTLE DARAJUAY and MALUTUGAUI are three small islands south of Catbalogan. They are high, and only the two Darajuays must be guarded against when approaching Catbalogan from the south. The latter is close to shore and in shoal water.

WARAY BANCOA and LUTAO are two reef areas that prevent direct approaches by vessel to Catbalogan.



BURI is a hilly, coconut-planted island surrounded by shoal water and reefs and lies close to the shore NW of Catbalogan.

CAGDULLON ISLAND is a navigation hazard to boats plying between Catbalogan and Calbayog. It is high, prominent and very small, with bad reefs and shallow water close in.

CANAHAUAN ISLANDS are a group of two large and several smaller islands lying about four miles off Samar. These islands offer some good anchorage among them, sheltered from all winds. Port Aguirre affords excellent refuge during typhoon weather. The islands are high and wooded.

LIBUCAN ISLANDS, NW of the Canahauans, are a group of three islands and several islets and lie about four miles off Samar. The largest island, Libucan, has a good harbor on the north used by small vessels during the SW monsoon period. The islands are high and wooded.

TAGDARANAO ISLANDS are two small islands off Tarangnan Pt. They are high and prominent and can be passed close to their west side.

The mouth of Gandara River, on Samar opposite the Libucan Islands, has a delta area composed of several small islands, all heavily mangrove-fringed. These include GOYAM, BANGON, CAMBAY, CAPRANGASAN, SONDARA, and several other small unnamed islands. This delta area also embraces several other rivers, some of which are navigable for limited distances.

NAPALISAN is a small island just out from the delta area described above. It is relatively high, and important only as a landmark for navigating the rivers in the area.

SANTO NINO is a very high, partially wooded island, relatively reef-free and steep-to. It was included in the naval survey of the Samar Sea area.

It is an undeveloped island with few inhabitants who are mainly engaged in fishing. It lacks fresh water and has no timber resources.

There are no roads or communications—only a few old carabao trails. A small harbor on the north is reef-bound and unsuitable for any but small boats. The SE end of the island is the best suited area for development. It is more level and offers limited protected anchorage from both monsoons around Olo Point (SE). It has, however, no construction materials and everything, including concrete aggregate, would have to be brought in. There are no buildings which could be used by occupying forces; no skilled labor for construction purposes.

CAMANDAG, just north of Santo Nino Island, is a high, mountainous, steep-to island without military significance. The few very small coastal plains have a few native nipa huts whose inhabitants were mainly engaged in fishing.

PILAR is a very small island between Camandag and Santo Nino Islands.

From Buri Island, north of Catbalogan, to Calbayog, the offshore conditions, including several islands previously mentioned, are best understood by reference to USC & GS chart 4420.

At Calbayog there are no dangerous offshore conditions and ships can anchor anywhere a mile from the shore in a spacious, open roadstead.

The delta of Jibatan River forms several small unnamed mangrove islands all well within the shoal area formed by the river.

From the Jibatan River mouth NW along the coast there are no dangerous offshore conditions outside of a mile from the shore. Several small islands and rocks, all close to the shore, are dotted along this coast.

DESTACADO is a small crescent-shaped island about 14 miles off the NW coast of Samar. It is high, comprised of several peaks and is fringed with high cliffs. It is steep-to, ships being able to sail around it about half a mile from its shores. Lode Bay, on its SW side, offers protected anchorage from the NE monsoons, but care must be taken of the rocks in front of barrio Mongolbongol. The island is overgrown and unsuitable for development.

NARANJO ISLANDS are a group of small islands lying off the SW entrance to San Bernardino Strait. The islands are generally high and hilly and unimportant except as a small base for light naval forces harassing shipping using San Bernardino Strait.

Deep-water channels pass between all of the islands and limited protected anchorage can be found in any weather.

The islands have no roads and no installations of military significance. Some copra and fish were the only exports, and these limited.

CAPUL is a large oval-shaped island in the SW entrance to San Bernardino Strait. The terrain is rolling with the highest peaks on the southern end. The largest level areas are along the NE coast. Capul, the largest barrio on the island and the



seat of the municipal government, is about two-thirds of the way down this coast. In 1939 the municipality of Capul included Capul Island, the Naranjo Islands and Destacado Island, and had 7488 inhabitants.

Capul Island affords no good anchorage area for large vessels. Naranjo Pass and Capul Pass, the two large bodies of water on either side of the island, are important steamer routes south out of San Bernardino Strait. The tidal changes present strong currents and tide rips through these two passes, making anchorages along the coast of Capul difficult. One small bay on the NE shore of Capul, San Luis Bay, is small and open to the NE monsoons. The small barrio of San Luis is located at the head of San Luis Bay.

DALUPIRI is an oval-shaped island of about the same area as its neighbor, Capul. Capul Pass to the west, and Dalupiri Pass to the east, are alternate large vessel routes for vessels proceeding down the west coast of Samar. Both passes have strong tidal currents and tide rips. Dalupiri has a rather extensive shoal area off its southern end. Vessels drawing more than 15 feet would have to swing at least a mile from shore around the south end of the island.

The northern third of this island is relatively low and level, and may prove extensive enough for basing facilities, or possibly a fighter air strip. The southern two-thirds of the island is low rolling hills, heavily wooded.

The two largest barrios on the island are San Antonio (seat of the municipal government) and Dalupiri.

The only other dangers in the area of the Dalupiri and Capul Islands are Rubi Shoal and Diamante Rock about two miles south of the southern tip of Capul Island. These dangers are shown on charts of the area.

San Bernardino Strait is a wide, well marked passage, but is dangerous during heavy NE monsoon weather or typhoons. Several large boats have gone aground there. Tidal currents are especially strong. An experienced ocean-going ship's captain stated that it is advisable to hug the Luzon coast as much as possible when passing through the strait.

SAN BERNARDINO BANK and Island are located in the NE entrance to San Bernardino Strait. The island has a light 215 feet above HW visible for 21 miles. The island is free of dangers beyond a radius of one mile.

San Bernardino Bank, where shallower than the surrounding waters, is still deep enough for the largest ocean-going vessels.

## **6. Winds:**

From October through March, the predominant winds are from the NE. This NE monsoon period is accompanied by considerable rain and occasional typhoons. When the NE monsoon is best developed in January, the winds blow with remarkable steadiness, the speed averaging 15-20 mph. Stronger winds are usually produced with rising pressures, but these conditions are of short duration and become less frequent as the NE season draws to a close.

From June to September or October, the prevailing winds are from the SW, and the season is the SW monsoon. The winds from the SW are not as even as from the NE but the uninterrupted wind stream averages about 10-15 mph. The SW monsoon season produces more squalls, particularly along the coasts, than the NE monsoon season.

Described as the most important climatic feature in the archipelago, the trade wind originates in the great tropical high pressure area of the eastern North Pacific. Traversing the Pacific from a NE, east and SE direction (depending on the pressure distribution), it may be frequent at any time of the year, but is usually predominant during March and April and often February and May.

The effect is seen particularly on the east (Pacific) coast of Samar.

## **7. Currents:**

Strong currents are felt through San Bernardino Strait and along the NW coast of Samar.

Currents of from four to eight knots are encountered through this Strait during flood and ebb tides and these cause plainly visible tide rips, eddies and water whirlpools.

Along the NW coast of Samar, particularly between Samar and Dalupiri Island, Dalupiri Island and Capul Island and Capul Island and the Naranjo Islands, strong four to eight-knot currents are experienced. Violent tide rips and eddies are encountered through these channels.

Strong currents are felt in the passes between the Balicuatro Islands and between these islands and Samar. Tide rips and eddies are caused by the action of the currents around shoal and reef areas.



Some current causes tide rips and eddies between Homonhon Island and the SE tip of Samar.

In San Juanico Strait the currents attain at times a strength of from four to five knots, forming violent eddies and tide rips in places.

## 8. Tides:

		Higher High water	Lowest Tide
San Bernardino Island	.. .. .	3.4 feet	-1.5 feet
Biri Island	.. .. .	2.4 "	-1.5 "
Catarman	.. .. .	4.2 "	-1.5 "
Laoang	.. .. .	4.6 "	-1.5 "
Helm Harbor	.. .. .	4.8 "	-1.5 "
Hilaban Island	.. .. .	4.7 "	-1.5 "
Andis Island	.. .. .	4.9 "	-1.5 "
Minanut Island	.. .. .	5.1 "	-1.5 "
Matarinao Bay	.. .. .	5.0 "	-1.5 "
Guiuan	.. .. .	2.6 "	-1.5 "
Catbalogan	.. .. .	5.2 "	-1.5 "
Calbayog	.. .. .	4.1 "	-1.5 "
Mauo River	.. .. .	2.4 "	-1.5 "

## 9. Charts:

Charts of the USC & GS of Samar Island are complete, and ships' captains, native and foreign, have reported the charts as extremely accurate.

□   □   □

# SECTION IV-V—PORTS, ANCHORAGES AND HARBORS

(Map 2)

## A. PORTS

There are no primary ports in Samar Province. None of the largest inter-island steamers or motor vessels called at any of the small ports regularly—largest vessel to call regularly was the 1300-ton *Taurus*. Steamers on the Tacloban (Leyte Island) to Manila run stopped occasionally at Catbalogan and Calbayog, but mostly the trade of the island was handled by smaller motor vessels and launches from Cebu (Cebu) and Tacloban (Leyte). Considerable coastal trading was done by native boats.

*Bodegas* (warehouses) were found in most of the small ports, and copra, rice and *abaca* were allowed to accumulate when telegraphic or radio messages were sent to Tacloban or Cebu requesting a vessel to call.

The principal ports of Samar, at which larger launches and small motor vessels called regularly, are listed here.

**1. Allen**—12° N, 124° 17' E. Highest high water 2.4 ft. Lowest tide -1.5 feet.

Allen has no wharf and all of its cargo had to be lightered out to vessels at anchor.

Anchorage off this coast is in open water and is untenable during the SW monsoon season. During the NE monsoon the waters are calm, although this coast is affected by the tidal currents of San Bernardino Strait. Tide rips and eddies are common off this coast and must be watched by vessels coming to anchor.

The town has no facilities for loading or unloading and is completely dependent on native craft for transporting the cargo from shore to ship.

**2. Balangiga**—11° 07' N, 125° 23' E. HHW 2.6 feet. Lowest tide -1.5 feet.

Balangiga was an important south coast barrio for the exporting of copra. Most of the copra was shipped by native boats to Guiuan or Tacloban.

There was no wharf at Balangiga and native boats loaded such launches and larger boats that called there from the small beach area in front of the town. Depths of 3½ to five fathoms are available half a mile from the shore and the approach to this area is free of offlying dangers. The area is well protected from NE monsoon winds and seas, but is open to winds and seas during the SW monsoon season.

**3. Borongan**—11° 37' N, 125° 26' E. HHW 4.9 feet. Lowest tide -1.5 feet.  
(Photo 4).

Borongan is the best port on the east coast. It is enhanced by a concrete wharf and breakwater, an airfield and some good seasonal landing beaches. A large ocean freighter of 9300 tons has been known to anchor in the port area and load copra.





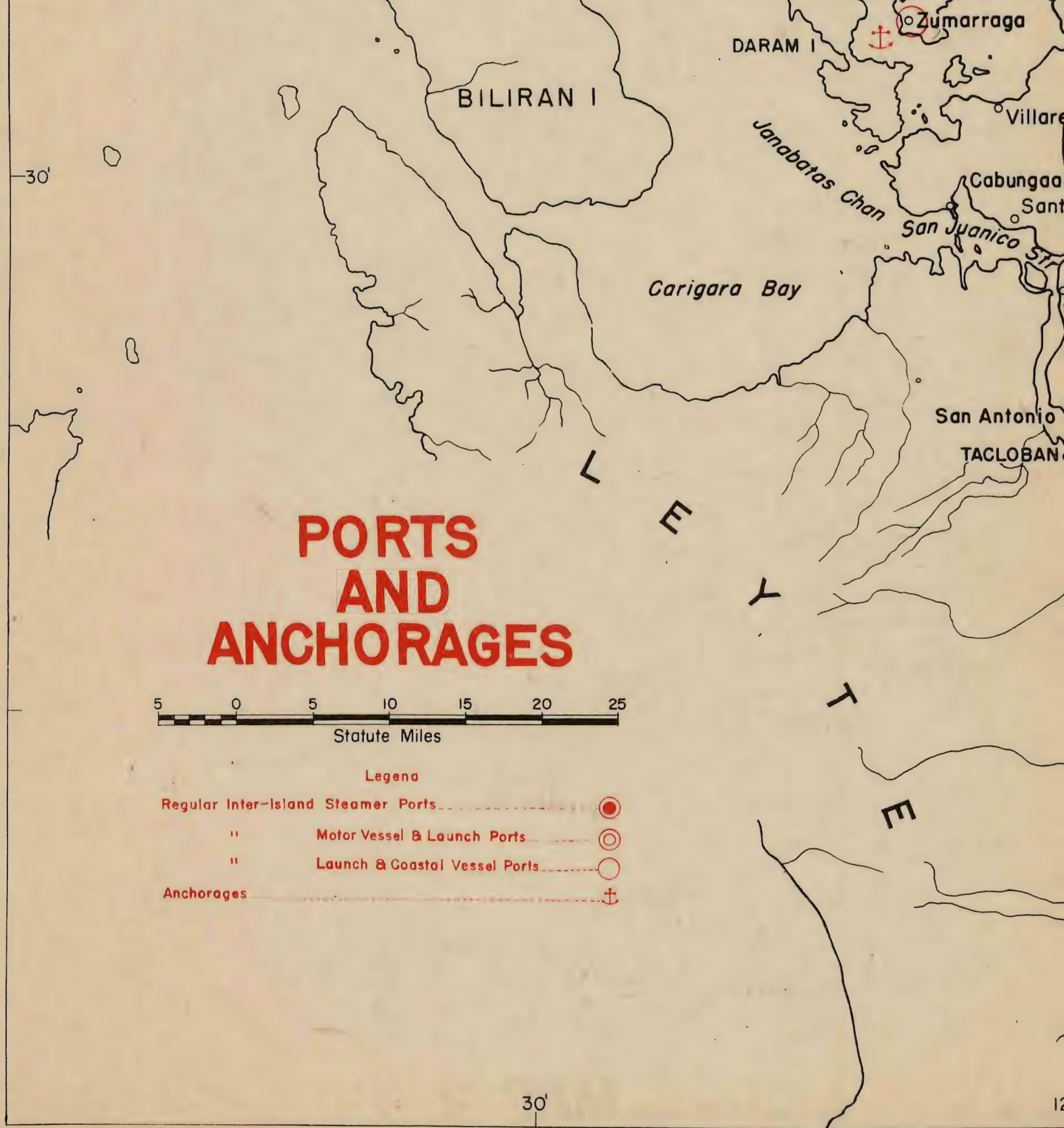


















The harbor is natural, and several large vessels can stand in the port area in partially protected anchorage. The port area is somewhat divided by a coral finger that extends about a mile out from the mouth of Loom River and serves as foundation for the pier.

This pier is of concrete, with depths of 21 feet at its end, 17 feet at the inner pile cluster alongside the eastern face, and nine feet at the inner pile cluster alongside the western face.

The total pier consists of a 784ft causeway, 19½ feet wide for 728 feet of its length, and widening to 39 feet for the last 56 feet of its length, extended by a reinforced concrete pier 328 ft x 9 ft.

The pier is protected by a breakwater a short distance to the east. A surfaced road connects the pier with the town of Borongan.

During the SW monsoon season the waters at Borongan are quiet and anchorage and beaches could be used satisfactorily. During the NE monsoon heavy surf is encountered off this coast and use of the beaches would be out of the question for much of the time. The natives use Borongan River with their boats during this season.

To the lee of Andis Island is about one square mile of protected anchorage. Although Andis Island is low, and does not shield the area from NE winds, it does break up the surf, giving quiet waters for anchorage.

From the five-fathom line (about three-quarters of a mile from the head of the bay north of the pier and half a mile from the head of the bay south of the pier) to a line drawn from Andis Island to Divinubo Island is about six square miles of water from five fathoms to 40 fathoms deep, mud bottom with only one small patch of offshore reef over which the waves break.

Several semi-permanent and temporary *bodegas* are available at Borongan for storage. A 9300-ton vessel loaded 500 tons of copra at one time which had been stored at Borongan.

Native boats and barges were towed out to vessels at anchor by three diesel launches of three to five tons.

**4. Calbayog**—12° 04' N, 124° 36' E. HHW 4.1 feet. Lowest tide -1.5 feet. (Photo 38, 39).

Calbayog is an important west coast exporting town that shipped quantities of fish, copra and *abaca*. For all its importance it had no pier or wharf, the cargo being lightered out to vessels at anchor about a mile from shore.

The Calbayog River mouth had been dredged, and this dredging continued on through the wide, shallow sandy beach area, out to about the one-fathom line. Dykes were then built either side of the dredged area forming a channel deep enough to permit small boats and launches to enter the Calbayog River. These boats tied up at small marginal jetties along the west side of the town to discharge or pick up cargo.

Anchorage off Calbayog is in open water and subject to high seas during the SW monsoon. It is sheltered from the NE monsoons. Approach to the anchorage is direct and there are no offshore dangers.

It is reported that before the war there were eight kerosene and diesel launches (up to 30 tons) available for towing native lighters and barges to and from the river mouth. There were also two 20-ton lighters. All of these craft were normally kept up Jibatan River at barrio Trinidad (Sabang) where protected anchorage was available.

**5. Catarman**—12° N, 124° 38' E. HHW 2.4 feet (approx). Lowest low water -1.5 feet. (Photos 1, 2):

Catarman, though possessing no sheltered anchorage or other port facilities, was a large exporting centre for copra and rice. It also had many good buildings and an airfield used in connection with the Army cadre. Copra and rice were trucked to Catarman where it was loaded in small boats for lightering out to the larger vessels offshore.

Anchorage is offshore in an open roadstead unprotected from winds from the north or NE. During the SW monsoon season the area is sheltered and the water still. Approach to the anchorage requires avoiding a few shoal areas accurately charted.

The only loading facilities available at Catarman are two towing launches of two or three tons each and small native boats and lighters.

Since vessels called here only at intervals of three or four days, provisions for the storing of copra and rice must be available in Catarman, though their capacity is unknown.



**6. Catbalogan**—11° 47' N, 124° 53' E. HHW 5.2 feet. Lowest tide -1.5 feet.  
(Photos 31-34):

The harbor at Catbalogan is small and open to the SW monsoons. The water deepens gradually from the shoreline, the five-fathom line being about a mile and a quarter from the beach and the 10-fathom line a similar distance out from that.

Catbalogan is the principal distributing centre for the island and has several permanent buildings. The wharf is new (concrete) with 11-19 ft alongside the fender piles. It was designed to accommodate inter-island vessels and only about two or three vessels of this size (500-1300 tons) can use the pier at one time. Smaller vessels and launches can tie up alongside the wharf according to draft. There is an "L" on the south side of the pier about 300 feet from the end, and launches used to unload inside the protection it offered. Fresh water could be obtained from a pipe connection at the cargo shed on the wharf.

Twelve diesel and kerosene launches (two to 60 tons) were available at Catbalogan for towing lighters and native boats to larger vessels that chose to anchor off the pier, and for other general harbor use.

Catbalogan received more imports (farm machinery, canned goods, etc) than other ports but its exports, by comparison with other large coastal towns, were relatively small.

**7. Guiuan**—11° 02' N, 125° 43' E. HHW 2.6 feet. Lowest tide -1.5 feet.

Guiuan was an important exporting centre for copra, though it had one of the most inaccessible harbor areas on Samar. The harbor is a reef-encumbered open roadstead that extended for about six miles offshore. The water channel approaches to the causeway are deep, but only small inter-island boats and launches can tie up in the 10 feet of water off the end.

A small anchorage area of about a quarter of a square mile is available off the end of the pier where there is a least depth of 18 feet. The anchorage is protected from both SW and NE seas, but is exposed to winds from the south and SW.

The causeway, completed in 1936, is 1670 feet long and 16.4 feet wide. There was a depth of six feet off its end. Work was under way in 1938 to lengthen the causeway an additional 738 feet and construct at its end a small concrete wharf 197 feet long by 29½ feet wide. This extension was to have 10 feet of water at its end.

There were no unloading facilities other than native boats.

**8. Laoang**—12° 34' N, 125° 01' E. HHW 4.6 feet. Lowest tide -1.5 feet.

Laoang was the largest exporting port on the north coast of Samar. Copra and some hemp were the main exports. Five jetties on the SE side of the town handled such small boat traffic as was necessary and one larger dock was used by the ferry that crossed the narrow channel from Samar. The depths at the end of the small jetties are from eight to 10 feet with about 15 feet of water off the larger dock.

There is no area of protected anchorage of sufficient size to anchor more than one or two small inter-island steamers. Laoang Bay is shallow and open, and the deeper, more spacious Port Palapag is not convenient to Laoang.

Four diesel launches of from two to 20 tons at Laoang were used for towing native boats and for carrying cargo out to larger vessels at anchor off the mouth of Laoang Bay.

**9. Pambuhan Sur**—11° 15' N, 125° 32' E. HHW 5 feet. Lowest tide -1.5 feet.  
(Photos 8, 9):

A special type of wharf, designed for loading ore into large freighters by continuous conveyor belt, was located south of barrio Pambuhan Sur. The wharf, made of oregon pine, was strongly constructed. Much of its length was over swamp-land and wide coral reef. Fender piles lined up at the end of the wharf had 23 feet and 29 feet respectively at the southernmost and northernmost clusters.

Matarinao Bay has some good protected anchorage, but is badly encumbered with reefs and shoals. The reefs that affected the passage to the wharf were marked with private buoys.

Though not suitable in its present condition for general usage, the wharf could be cut down in height and floored more easily than a new wharf constructed in the area. A narrow-gauge railway ran on the inner half of the wharf to the loading bin for the continuous belt conveyor.

There are no port facilities available beside the buildings of the mining company who owned the wharf.





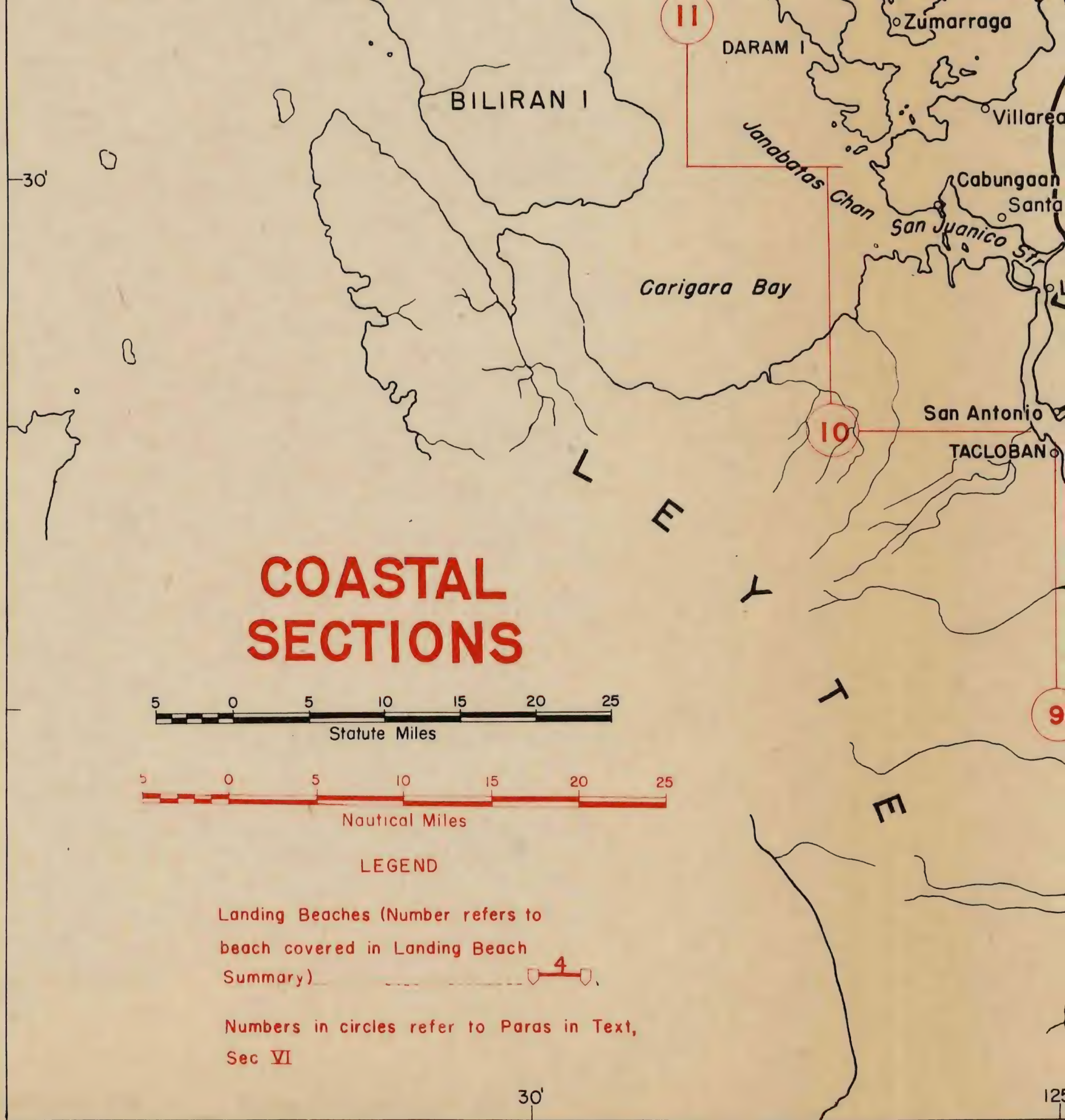












# COASTAL SECTIONS

5 0 5 10 15 20 25  
Statute Miles

5 0 5 10 15 20 25  
Nautical Miles

## LEGEND

Landing Beaches (Number refers to beach covered in Landing Beach Summary)



Numbers in circles refer to Paras in Text, Sec VI







**B. ANCHORAGES AND HARBORS**  
(See also Sec VI, Coastal Description.)

Name	Coordinates	Area in Sq. Naut. miles	Water depths (fms)	Protected from NE SW	Anch.	Facilities
BANTAYAN .. BAY	12°33'N., 124°50'E.	6 to 8	5 to 15	X	Good	None
BIRI ANCHORAGE	12°38'N., 124°24'E.	1 to 2	5 to 20	X X	Fair	None
CASOGORAN BAY (Homonhon Island)	10°45'N., 125°44'E.	4 to 5	5 to 32	X	Fair	None
DOLORES	12°02'N., 125°29'E.	20 to 25	5 to 30	(X) X	Good	None
GAMAY BAY	12°20'N., 125°20'E.	10 to 15	5 to 50	X	Fair	None
MATARINAO BAY	11°14'N., 125°34'E.	4 to 6	5 to 30	X X	Poor	Wharf
ORAS BAY	12°07'N., 125°27'E.	1 to 2	5 to 10	X	Good	None
PORT BORONGAN	11°36'N., 125°27'E.	4 to 5	5 to 20	(X) X	Good	Wharf
PORT PALAPAG	12°36'N., 125°02'E.	4 to 5	5 to 20	X X	Fair	None
SAN PEDRO BAY	11°13'N., 125°05'E.	40 to 50	5 to 20	X X	Fair	None
ZUMARRAGA CHANNEL	11°40'N., 125°49'E.	8 to 10	5 to 18	X X	Good	Wharf

(X) Indicates smaller area protected from NE than SW.

□   □   □

**SECTION VI—DESCRIPTION OF COAST AND BEACHES**

(Maps 3, 4, 5, 6, 20)

(See also Section III, Offshore Conditions and Offlying Islands.)

*General:*

Samar Island has a general shoreline of 358 nautical miles (412 statute miles). It is rugged and uneven, having very little straight, unbroken sections of coast.

Small sections of good landing beach are dotted along the coasts on all sides of the island, but in each instance the beach has limiting factors. Weather, offshore conditions or shoal water along the coast are the three most prevalent dangers that limit the use of many of the otherwise good landing beaches. Anchorages off the north and east coasts of Samar are limited to SW monsoon season only.

There are very few places where troops, landing on the shores of Samar, will be able to proceed unhindered inland. The coastal plains skirting Samar are narrow and usually planted with coconuts or scrub growth. Around river mouths and certain bays considerable mangrove is found. Extensive swamp areas, with the exception of the SW section of the island and a few of the unimportant offlying islands, are rare. The ground, generally, is firm and will support MT under normal conditions.

The success of any military operation on Samar is directly dependent on the weather conditions.

*This description of the coastal area starts with the NW corner of the island and proceeds clockwise. Mileages shown are nautical miles unless otherwise stated.*

**1. Balicuatro Point—12° 35' N, 124° 17' E—to Bobon Pt—12° 32' N, 124° 34' E.**

This section of the north coast covers generally inhospitable terrain between Balicuatro Point and barrio Bobon.

Considerable shore mangrove, drying coastal coral reef, and numerous small offlying islands and reef areas are the principal drawbacks to use of this coastal area. Inter-island vessels used the alternate routes of Bani Channel, Biri Channel or San



Bernardino Strait when proceeding along this coast. The distance involved by using Biri or Bani Channels is the same, but through San Bernardino Strait is a longer route.

The offlying islands and offshore reefs have been covered in Section III.

#### *Beaches and Foreshore:*

From Balicuatro Point to barrio Lavezares is a wide expanse of drying coral reef with sections of mangrove swamp extending inland in places for several hundred yards. The terrain immediately behind the beach area, except for the mangrove swamp, is planted with coconuts and other scrub vegetation. Native nipa huts are scattered along the coast, approachable from the sea only at HW.

Lavezares Harbor, in front of barrio Lavezares, is reef-bound except for a small section of shoal beach at the barrio. This beach can be approached at HW only and then only by shallow draft boats. Urdaneta Harbor is just east of Lavezares Harbor and is also fringed with reef. The small barrio of Urdaneta is at the head of this harbor and deep water is within 100 yards of the barrio, though drying reef extends along the beach in front of the barrio. The harbor is small, with limited anchorage. Borabaybay is a small barrio on Bani Channel with deep water 200-300 yards offshore, but the coast in front of the town has drying reef at LW.

From Borabaybay on around the coast to Bobon the shore is a combination of dense mangrove and/or drying coral reef and totally unsuited for landings. There is, however, in the area just mentioned, a section of coastline just west of Bobon across Bobon River that is less encumbered than the rest of the coast. It has some drying reef, but deep water is fairly close to the shore. The foreshore is planted in coconuts and scrub growth.

Bobon River is just west of barrio Bobon. It is a fairly large river, but shallow. It is probably navigable for small boats at HW for a limited distance. A small mangrove island splits the river near its mouth.

Bobon Point has a drying reef extension which encompasses a small mangrove island. The reef extends NW from the point for several hundred yards. It offers some protection to small boats beaching to the lee of it in front of barrio Bobon. Coconuts grow along the foreshore up and down the coast and around barrio Bobon.

#### *Hinterland:*

The hinterland from Balicuatro Point to Lavezares is rolling hills leading to mountainous terrain several miles inland. There are no large level areas, but the area is neither high or too difficult for foot troops. The main hindrance to tracked vehicles or MT would be the forest growth and scrub and mangrove swamps along the shores.

From Urdaneta east to a point along the coast opposite Ibaun Island is a level area on which is the road from Lavezares to Bobon. High hills then come right down to the shore at this point and impede E/W land movement. From these hills east to Bobon, the hinterland is more level, with low rolling hills covered with coconuts and scrub.

#### *Rivers:*

Several small rivers empty along the shores in this section. The most prominent are the Bobon, the Gingarog and the Sinamangan. All the rivers along this coast have some mangrove along the shores for varying distances upstream. The Bobon and Sinamangan are known to be navigable for native *bancas* at HW. The navigability of the other small rivers is not known.

#### *Towns and Barrios:*

Bobon and Lavezares are the two largest barrios in the area. Each is a municipal seat of government.

At Lavezares the *municipio* building is the largest in town and has a galvanized iron roof. Fishing and copra are the main exports from Lavezares. It has road connections to Allen, on the west coast of Samar, and to Bobon and other parts of the north coast and the island.

Several other small barrios are between Lavezares and Bobon.

Bobon is a small town of nipa huts exporting mostly copra and some fish. The church is the only building that is prominent from seaward. The road from Lavezares east goes through Bobon. Bobon River is crossed by a ferry, the other small rivers having wooden bridges not believed serviceable unless they have been replaced since 1941.

## **2. Bobon Point—12° 32' N, 124° 34' E—to Rawis Point—12° 34' N, 125° E.** (Photos 1, 2):

Included in this section of coast are all the possible landing beaches on the north coast of Samar. Also in this area are the best airfield sites along the north coast.

#### *Anchorage:*

Between Bobon and Catarman large vessels can anchor anywhere along the coast a mile from the beach, taking care to avoid Catarman Shoal and another small



four-fathom shoal midway between Bobon and Catarman, about a mile from the beach.

From Catarman to Bugko Point the western entrance to Bantayan Bay, anchorage for large ships is still about a mile from shore, but numerous small offshore reefs and shoals (all shown on USC & GS Chart 4421) must be avoided.

Bantayan Bay is free of any dangers and offers good anchorage for large vessels anywhere within a mile of its shore. Some protection is afforded to the lee of Oot Point, the eastern entrance to the bay.

From Oot Point to Livas Point anchorage is available for large vessels a mile offshore. The only exception to this is a large detached reef NW off Livas Point and a small shoal patch just west of Livas Point, both shown on the chart.

Laoang Bay is more than half-filled with shoal water and large vessels would have to anchor out from a line drawn from Livas Point to Ipil Point (on Laoang Island). Smaller craft can anchor within the bay according to draft.

#### *Beaches and Foreshore:*

From Bobon Point to the mouth of Catarman River is a long stretch of good seasonal landing beach broken in only one place by a small patch of drying coral. The beach is firm sand and LC could come within a few feet of the beach before grounding. The shore is sandy soil planted with coconuts and some scrub. Two prominent landmarks indicating the extremes of this section of beach are the church in Bobon and the church in Catarman, both visible offshore.

The beach along this section is firm enough for MT and in most of the area should be able to proceed directly to the road a half to three-quarters of a mile inland.

From Catarman River mouth to Bugko Point the beach is divided about equally between good sandy beach and areas of drying coastal coral. The reefs would all be visible by waves breaking over them and LC could pick the suitable sections of beach.

The foreshore is low, level and sandy, planted with coconuts and scrub. MT could proceed, with some manoeuvring, to the road which is less than a quarter of a mile from the beach all along this section of coast.

The shores of Bantayan Bay offer good landing beaches, but more than half of the area is spoiled by the courses of the Bantayan and Laoangan Rivers which run parallel behind the beaches for several miles, making movement inland impossible once landed.

The foreshore of Bantayan Bay is level and sandy with coconuts and scrub growing back from the beach. The road along here is close to the beach to barrio Laoangan, where it then cuts across-country to Pambuhan, skirting some bad mangrove swamp. The shore behind the section of beach from Laoangan NE to the base of Oot Point is swampy and wet, being the course of the river whose mouth is at Laoangan.

Oot Point has no beaches around it.

The section of beach from the base of Oot Point to Livas Point is not suitable for landings due to the limited distance that can be moved inland. Two rivers, the Pambuhan, and another whose mouth is at the Laoang Bay base of Livas Point, wind through this area.

The head of Laoang Bay, although too shallow for larger vessels, will permit LC to come up to the beach. About two miles of good beach is available at the head of the bay, but not along either side of the bay.

The foreshore is sandy and planted mostly with coconuts. The road is within a quarter of a mile of the beach along this section and MT should be able to proceed directly to it.

#### *Hinterland:*

The north coast in this area produced mostly copra and rice. Coconut trees grew along the coast for distances up to two or three miles inland. In areas where the belt of coconut trees was narrow and more or less confined to the foreshore, rice was planted in lowlands between the foreshore and the hills inland. In places, particularly just east of Catarman River, the hills come down close to the shore, narrowing the coastal plain to a few hundred yards.

The hills which define this north coast plain lie generally from one to three miles behind the shore. Between the hills and the foreshore are rice paddy areas and some forest.

#### *Rivers:*

Several large rivers are in this section of coast. The largest river, and the first river east of Bobon is Catarman River, lying east of the town of Catarman.

This river can be entered at LW by boats of 3ft draft and is navigable for some distance inland. At HW boats of 6ft draft can enter the river and lie at Catarman in deep water throughout all tides. The entrance to the river is pronounced tricky by informants who have used it, and it is better to get local assistance when using the river with larger boats.



Other rivers along this coast are the Pambuhan, Bugko, Mondragon, Bantayan and Maquinalo and several lesser streams. The navigability of these rivers and streams is not known, but the presence of small barrios inland along their courses indicates that native boats probably use these rivers at least at HW.

#### *Towns and Barrios:*

The principal towns and barrios along this section are Catarman, Laoang (Laoang I.), Cauayan, Maquinalo, Mondragon, Bugko, Bantayan, Laoangan, Cabab-tuan, Pambuhan, Camparanga and Burabud. Catarman and Laoang are by far the largest, and the only ones to which much importance is attached. Most of the coastal vessels calling along this section of coast anchored off Catarman or at Laoang. Catarman is a town of about 350 nipa huts and several wooden buildings, including the cadre barracks, church and *municipio*. The town is fairly well screened from offshore by scrub and coconut trees although the church roof is reported visible. There is no jetty in front of Catarman, but small marginal jetties are reported along the river at the town.

Catarman is also the site of the only airfield on the north coast. This airfield lies between the town and the beach and has possibilities for improvement. The cadre barracks are on the SW end of the airfield.

Other barrios along this section of coastline are small, consisting mainly of nipa houses. There are no jetties or wharf along this coast at any of the barrios due to the high seas and strong winds which would quickly destroy them.

#### *Roads:*

At Catarman, Route 1 (from the south) turns west and proceeds generally along the coast to Allen and a few other small barrios along the north coast of Samar. In the area concerned, Route 1 is a one-lane, all-weather road to Bobon, lying from a half to three-quarters of a mile back of the beach.

East out of Catarman is a section of Route 3 (shown as 3F on the Road Map). From Catarman to Maquinalo it is one-lane, all-weather, and then is only one-lane, seasonal to Bantayan where it again becomes one-lane, all-weather, over to Laoang. At Catarman, Route 3 had a vehicle ferry to cross Catarman River.

Route 1, south out of Catarman, is one-lane seasonal, winding through hills and forested areas generally following the Catarman River valley.

### **3. Rawis Point—12° 34' N, 125° E—to Oras River—12° 08' N, 125° 26' E:**

This area embraces a rather large section of coast on which very little information is available other than that given in the *Coast Pilot* and on the Naval Charts. The area generally is untenable, caused by a combination of bad weather, mountainous terrain, lack of suitable protected anchorage and landing beaches, and no communications.

#### *Anchorage:*

Limited protected anchorage is available in Port Palapag, but aside from sending small boats ashore on Palapag or Laoang Islands, or up the restricted tortuous channel to Catubig River, there is little occasion to anchor in this area. Shoal water, mangrove swamp, and coral shore reef typify the coast from Rawis Point to Oacan Point and unloading from vessels at anchor in Port Palapag, at best, would be a lengthy task.

From Oacan Point down the NE coast to Gamay Bay, vessels can anchor in open water anywhere within a mile from the coast. At Gamay Bay there is some anchorage space for large vessels to the lee of Sora Cay reef. Gamay Bay is encumbered with numerous reefs, however, and its very uneven coastline is nearly all reef-fringed. Saonloc Bay, Lapinig Bay, Helm Harbor and San Ramon Bay all have limited anchorage area for small vessels, but reference to the nautical charts should be made when using them. (Description here of the dangers to anchorages in Gamay Bay and its smaller bays would be superfluous when USC & GS Chart 4421 shows them so well.)

From Gamay Bay to Bunga Point there is no offshore anchorage area because of deep water and wide, drying coral reef extending offshore almost to the edge of the deep water. Three small bays, Panablijon, Pangpang and Alugon, are reef-bound, but do offer very limited anchorage area. This is not good anchorage, however, since it is open to the NE seas and there is no way of unloading cargo or troops to shore.

Around the hook of Bunga Point and Apiton Island is again a small area of limited protected anchorage, but the coastline is reef-bound and mangrove-fringed and generally inhospitable.

Lipusan Bay is filled with shoal water with muddy bottom at its head.

#### *Beaches and Foreshore:*

From Rawis Point to Oacan Point there are no suitable beach areas. Most of the coast along this section is reef-bound. The coast around the channel leading in to Catubig River is all mangrove swamp fronted by shoal water, and though there are places where small boats might beach, there is no beach area suitable for military



operations. The embayment in which Boring Island is located is very shallow with soft muddy areas along the coast.

The rest of the north coast over to Oacan Point is reef-bound.

The foreshore along this section of the north coast is gently rolling with a combination of mangrove, coconut and scrub growth, frequently broken by many small rivers and the large Catubig River.

From Oacan Point to Manjud Point there are no beaches, and since high ground comes right down to the coastline for most of this distance there is little or no foreshore or any coastal plain. For nearly all of this distance the coastline is fringed with reef that dries at LW. The only exceptions are where cliffs face directly on to deep water, and at Mapanas Bay where a small barrio of the same name has a short beach in front of it.

The southern half of Sacamalig Bay has a section of beach about a mile long. It is, however, backed up by steep, high hills and there are no inhabitants in the area.

In Gamay Bay are several small, isolated beach sections at the heads of the various small coves and bays breaking the coastline. Since high ground is close to the shore all around the bay these beach sections lose significance, as movement inland is very difficult even for foot troops, once landed. There are so many reefs and shoals in the bay that no direct route to the beaches can be made even by LC.

The foreshore around Gamay Bay is about 75% mangrove-fringed, with some coconuts back of the mangrove but mostly scrub and forest growth.

From Gamay Bay to Bunga Point there are no landing beaches and the shoreline is all mangrove swamp.

From Bunga Point to the Oras River mouth there are no landing beaches. The foreshore along most of this coast is mangrove swamp backed by coconut trees and scrub growth.

#### *Hinterland:*

Hinterland from Rawis Point to Oacan Point is high hills, heavily forested, rising about a mile inland from the coast. The hills are broken by small valleys through which wind the numerous streams and rivers which flow toward the north coast. The largest valley is that of Catubig River which is wide near the coast and narrows to a few hundred feet at places along the river course. The hinterland along this north coast would be difficult to traverse.

Beginning at Oacan Point and continuing SE along the coast to Sacamalig Bay the hinterland is high and mountainous. At Cape Espiritu Santo, which derives its name from its height, rather than from a projection in the general shoreline, the mountains are at their highest. From NE, two summits of nearly equal height (1457ft and 1481ft—the southern one the higher) are prominent. These mountain peaks are visible for 40 miles and were used by the Spanish navigators as landmarks for making San Bernardino Strait.

Palapag Mesa is a long, flat-topped, wooded ridge  $1\frac{1}{2}$  miles long NE/SW with a greater elevation of 1229 feet. Its northern extremity (1226 feet high) lies five miles SSW of Cape Espiritu Santo. It is prominent from off the north coast of Samar, more from its shape than from its height, which is less than that of the cape and the high mountains westward of it, as seen from the vicinity of Laoang. It is not visible to a vessel moving along the NE coast between Oacan Point and Sila Point.

The hinterland behind Gamay Bay and the rest of the coast south of Gamay Bay to the Oras River mouth is high, hilly and heavily wooded.

#### *Rivers:*

The Catubig and the Oras are the two largest rivers in this section of coastal area. The Catubig is navigable for large launches as far as Catubig and for smaller launches and native boats considerably farther. Oras River is navigable, for boats drawing three feet, for an unknown distance.

There are many other lesser rivers and streams which drain north along the north coast, but very few streams that drain east along the section from Oacan Point to Oras River. Gamay River is the largest river along this section with the exception of the Oras. Entered at HW it may be found navigable for several miles. It is shown on the chart to be navigable for about two miles at a least depth of nine feet once the sand bar mouth is crossed. There is a least depth at the mouth of about  $1\frac{1}{2}$  feet at LW.

#### *Towns and Barrios:*

Larger barrios in this section are Catubig and Palapag on the north coast and Jipapad and Oras. (Jipapad is inland about four miles west of Laping Bay in Gamay Bay.) Each of the barrios is a municipal seat of government.

Catubig lies about 10 miles inland from the mouth of Catubig River and small steamers and launches drawing up to 10 feet were able to reach this barrio.



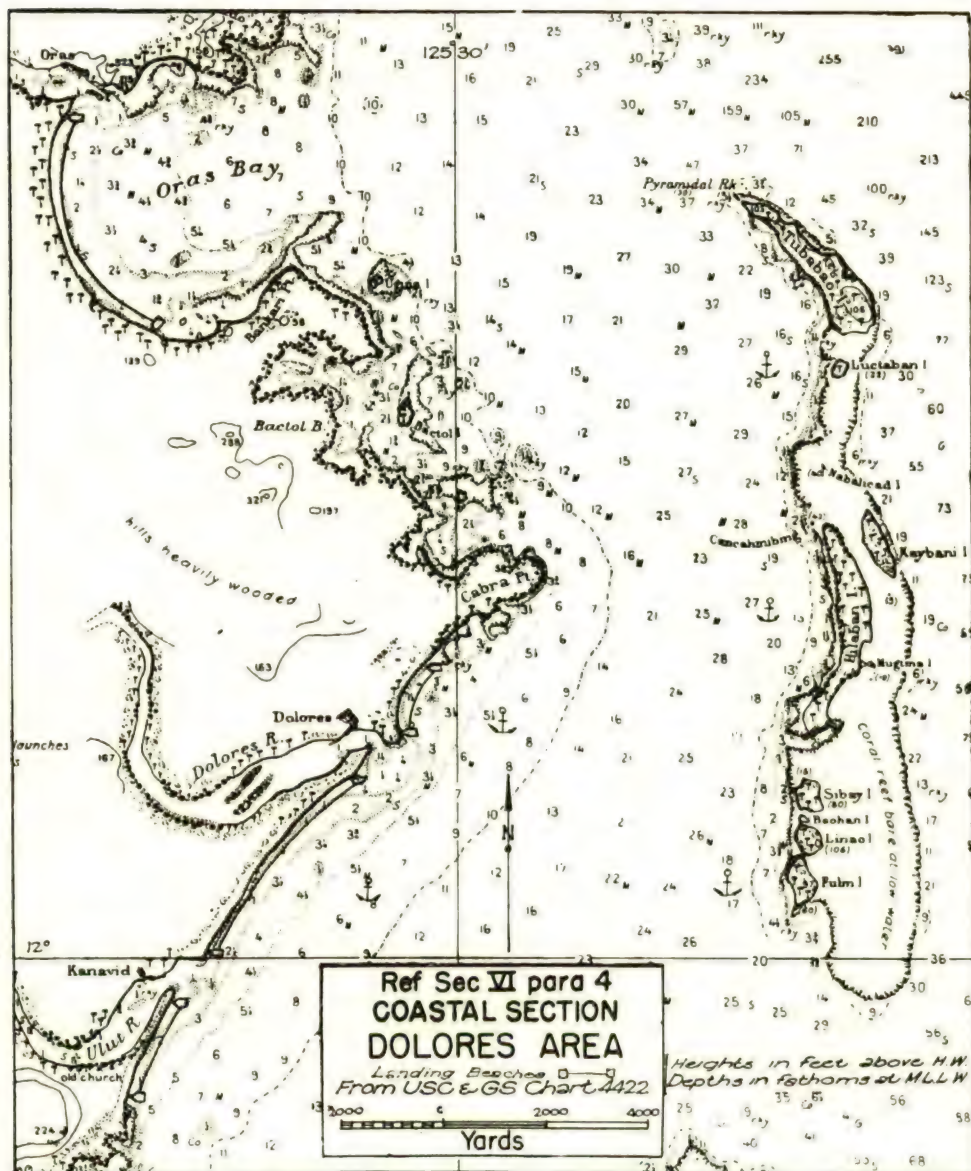
Palapag is a small barrio, the most prominent building of which is the church. A short section of road connected Palapag with Pangpang on the coast at the eastern channel to the Catubig River mouth.

#### Roads:

The short stretch of road from Palapag to Pangpang is the only one in this section.

#### 4. Oras River—12° 08' N, 125° 26' E—to Pindilin Point—11° 52' N, 125° 26' E:

In this section are some of the best landing beaches on Samar. However, use of them is dependent on good weather. During the SW monsoon period landings along this coast would be good.



#### Anchorage:

In Oras Bay an area of about one square mile is available for anchorage of vessels up to 30ft draft. The five-fathom line is just over a mile from the shore at the head of the bay and is much closer to the shore along the sides. The head of the bay is sandy beach, whereas the sides of the bay are reef-bound.

Anchorage out from Oras Bay is possible to Apiton Island, beyond which the water is too deep. Where anchorage in Oras Bay is open anchorage, ie subject to heavy swell during NE monsoon period, there is limited sheltered anchorage to the lee of Apiton Island.

There is ample sheltered anchorage in deep water to the lee of Tubabao Island and the long reef and islands south of it. Vessels making along this coast of Samar always passed between these islands and the mainland so as to make use of the quieter waters. Anchorage is possible all along the western side of these islands and reefs a half mile from their shores.



This is the largest area of protected anchorage along the east coast of Samar, and, with the good landing beaches at the head of Oras Bay and along the coast south of Dolores, it is the most important anchorage area for amphibious landings. It is too far from the respective beaches of Oras Bay and Dolores for operations, but vessels can lie here awaiting their turn to unload in the more restricted and open anchorages closer to the beaches.

Along the landing beach area at Dolores large vessels (30ft draft) can anchor a mile from the shore in anchorage that is partially protected by the islands and reef mentioned above.

Between the mouth of Ulut River and Pindilin Point anchorage is generally farther from shore and has numerous small detached reefs. West of Makate Island is an area of mud bottom anchorage in five to nine fathoms that was used by coastal vessels.

#### *Beaches and Foreshore:*

In the head of Oras Bay, from the mouth of Oras River two miles south along the coast, is an excellent unbroken section of sand beach. The one-fathom line is between 200 and 300 yards from the beach and shallows gradually to a firm sand beach.

The foreshore is heavily planted with coconut trees which extend inland on level terrain for about a mile. Scattered driftwood will be found on the beaches washed up by high seas during the NE monsoons. This beach is good at any tide.

The coast from Oras Bay to Cabra Point is uneven and dotted with many small detached reefs. The coast is fringed with mangrove and the area is not suitable for landings because of reef and mangrove. However, from this point to the Dolores River mouth is about a mile of good sand beach with the one-fathom line only 200 yards from the shore. The area around the mouth of the Dolores River is shallow and landings should be made at least 800 yards north or south of the river mouth.

From the Dolores River mouth to the Ulut River mouth is a section of sand beach two miles long. The northern half of this beach is good, but the southern half is partially spoiled by a narrow belt of drying reef along the beach. Under quiet water conditions this reef undoubtedly would be no serious drawback, but if a high surf were running, as it does during NE weather, this section of beach would not be desirable.

South of the Ulut River mouth is a long peninsula formed by the river paralleling the coastline for some distance before running inland. This peninsula has about a mile of good landing beach fronting it, but movement inland, once the beach is attained, is limited to a small neck between the curve of Ulut River and some high ground about 400 yards south of the river.

From Cabra Point to this beach south of the Ulut River mouth, the foreshore is gentle, sloping sand beach planted with scattered coconut trees. The road runs along this foreshore section and MT can proceed directly to it.

From a point one mile south of Ulut River to the mouth of Tubig River there are no suitable landing beaches, the coastline being reef-bound, rugged, and backed by mangrove swamp.

From the Tubig River mouth to Pindilin Point is a fair landing beach. It is partially spoiled, however, by a large offshore shoal area and some coastal reef. About 800 yards of good beach are in front of the small barrio Mantang with the one-fathom line about 200-300 yards from the shore.

The foreshore is coconut-planted, gently-sloping sandy soil, and the road runs close behind the beach. Hills about 200 feet high, averaging less than half a mile inland from the beach, are along this section of coast from barrio Taft to barrio Mantang.

#### *Hinterland:*

Behind Oras Bay the hinterland is coconut-planted, level terrain for about a mile and then leads to hills and more or less jungle forest which stretches for miles inland. Beyond the level, coconut-planted terrain, movement would be difficult, even for foot troops.

From Oras Bay to the Dolores River mouth, medium-high heavily forested hills come down close to the shore. This section of terrain is not desirable because of the coastal swamp areas and the high, heavily forested hills.

From barrio Dolores to Ulut River is an area of good rice paddy country. It is reported that the Japanese are actively working these rice fields and trucking the rice south. The level ground extends from one to two miles inland where hills rise to mountainous terrain farther inland. The valleys of the Dolores and Ulut Rivers are forested inland, with swampy areas bordering the two rivers. Both rivers are navigable for considerable distance by boats drawing up to six feet. (In the case of the Dolores this is reported to be 32 miles inland.)

From Ulut River to Pindilin Point the Hilly terrain averages within a half-mile from the coast, leaving a narrow, coconut-planted, mangrove-fringed coastal plain.



The hills inland are heavily wooded and would not pass MT. The road runs along the narrow coastal plain between the beach and the hills.

*Rivers:*

Dolores River is reported navigable for boats with up to 6ft draft for 32 miles. It can be entered only at HW by boats of more than 2ft draft.

Ulut River is navigable by boats of 6ft draft for considerable distance, possibly farther even than the Dolores River. It, too, can be entered only at HW and has a wide, shallow bar condition which extends for half to threequarters of a mile up the river from its mouth.

Tubig River is deeper at its mouth than the Dolores or Ulut Rivers, but it is not navigable as far upstream. Light draft launches are reported to be able to navigate the river for five miles.

All three of these rivers offer good dispersal for LC and are by far the best method of transportation inland.

Other small rivers and streams break the coastline between Oras Bay and Pindilin Point, but information concerning them is lacking.

*Towns and Barrios:*

Most important barrios along this section are Dolores and Taft, each a municipal governmental seat. These and most of the other barrios along the coast are on Route 3. Just north of Taft, across Tubig River, Route 2 (from across the island) joins Route 3. This is the only road connection between the east and west coasts of the island.

Stone buildings as well as nipa huts characterise a lot of the barrios along the east coast. They stand up much better against the strong winds and typhoons experienced along this coast.

Inland are very few barrios, and such as there are are generally along the rivers. The natives frequently change the location of their barrios, so that barrio locations shown on maps may not always be correct.

*Roads:*

Route 3, which runs along this east coast, has its northern terminus at Oras. The Oras, Dolores, Ulut and Tubig Rivers were all crossed by ferries before the war. Other small rivers had wooden bridges. Route 3 along this coast is a one-lane seasonal road and, unless considerably improved by the Japanese, would not be suitable for much MT traffic.

Route 2 joins Route 3 about a mile north of Taft. Route 2 is the only E/W road that joins the eastern and western coasts and had been completed only a short while before the war. The Japanese are known to be using trucks over this road. It was a one-lane unsurfaced road with many cuts and fills for most of its length. Wood bridges crossed such rivers and streams as were along the route. There was a ferry at Taft.

**5. Pindilin Point—11° 52' N, 125° 26' E—to Borongan River Mouth—11° 37' N, 125° 26' E. (Photo 4):**

The coast from Pindilin Point south to the Borongan River mouth is generally inhospitable and there are no likely areas for amphibious landings.

The best landing beach in this whole section is at barrio Sulat, but shoal water fills the head of Sulat Bay and the beach could only be used at HW unless the landing party waded through water 100-200 yards.

*Anchorage:*

Sulat Bay, Port Libas, Napla Bay and Port Borongan offer the only anchorage areas not in open water. Each has limited protected anchorage. Other anchorages are in open water off the east coast in water more than 20 fathoms deep.

Sulat Bay has about one square mile of deep-water (eight to 10 fathoms) anchorage. The coasts of Catalaban and Anajao Island are relatively free of offlying dangers within the bay and can be approached safely to within half a mile by large vessels. The head of the bay at barrio Sulat is shoal, and large vessels cannot approach Sulat any closer than a mile and a quarter from the beach. The entrance to Sulat bay is narrowed to half a mile by a long coral reef projection jutting out from Taig Point in NE direction for a mile and a quarter and embracing the several small islands shown on the General Map.

Vessels of any size cannot navigate between Catalaban Island and Samar Island at LW and only small boats can use this passage at HW.

Port Libas is over half-filled with shoal water, and deep-water anchorage for large vessels is limited. The area embraced by the five-fathom line would be only about three-quarters of a square mile and the bay is entered through a neck only about three-eighths of a mile wide. Mangrove swamp and drying coral reef spoil most of the coastline with HW beaches at barrio Nena only.

Napla Bay offers fair deep-water anchorage in an area of about one square mile within the five-fathom line. The deep-water entrance to the bay is only a quarter of a mile wide and is bordered by heavy coral reefs. There are no landing beaches within the bay and mangrove swamp is continuous around its coast.



There is no deep-water pass between Napla Bay and Port Borongan although small boats can use a narrow channel just west of Andis Island.

The anchorage within Port Borongan is covered in para 6, this section.

#### *Beaches and Foreshore:*

The only beach with any military significance is that section about a mile long extending NW of barrio Sulat.

From Pindilin Point to this beach the coast is swampy and reef-bound and mud is encountered offshore. The foreshore is a combination of swamp and hills terrain with mixed vegetation. The road runs behind the swampy area.

The beach at Sulat is wide and sandy. At the NW end of the beach the one-fathom line is about 200 yards from the beach and runs almost due east so that it is 1000 yards from the beach at Sulat. The bottom is reported as sandy and firm with possibly a couple of inches of river silt around the mouth of Sulat River. This condition of river silt may be encountered on any landing beach near the mouth of a river.

The shore behind this Sulat beach is level and planted with coconut trees. Sulat River is behind this beach from 200 to 1000 yards and winds roughly parallel to the beach. It would have to be crossed to get to the rather large coastal plains (possible airfield site) south of Sulat.

From Sulat to Port Libas the coast is fringed with a wide drying reef backed by a coconut and scrub-planted coastal plain.

The shores of Port Libas are inhospitable, being fringed with mangrove swamp and drying reef. Inland from Port Libas high hills and mountainous terrain are close to the shores and the area is broken and forested.

From Port Libas to Napla Bay the coast is very uneven, fronted by drying coral reef and backed by a combination of scattered coconut trees, mangrove swamp and forested areas.

The shores of Napla Bay are swampy and mangrove-fringed with wide areas of drying reef. High, hilly, forested terrain comes down close to the shore right to the Borongan River mouth. No landings would be feasible along this coast north of Borongan River including Napla Bay.

#### *Hinterland:*

Throughout the section concerned, the coastal plain of level terrain never exceeds two miles in width and in many places narrows down to a few hundred feet. There are practically no inland barrios, the mountainous terrain being heavily wooded and lacking in water sources. In places, particularly behind Port Libas, the hills are very steep and would be difficult for even foot troops.

#### *Rivers:*

Two rivers, the Sulat and the Borongan, one at either end of the area, are the only important waterways in this section.

The Sulat may prove to be navigable for a mile or two for boats up to 3ft draft. It can be entered at HW only. Its banks are lined with coconut trees. It is probably fordable anywhere except near its mouth opposite barrio Sulat.

The Borongan is a deeper river—ships' boats from vessels at anchor offshore used it frequently—since the entrance to it is quieter during NE monsoon weather than at other rivers in the area. Its navigable distance is about six miles for boats of 3ft draft.

Numerous other small drainage rivers break the coastline between the Sulat and Borongan Rivers. They are all believed fordable, but some have steep banks and mangrove swamps bordering them.

#### *Towns and Barrios:*

Sulat and San Julian are municipal seats of government and are the two largest barrios in the area. Because of the poor coast throughout this section, the barrios were small and are found along the coast wherever a break in the reef allows boats to beach.

The road (Route 3) does not connect with many of the small barrios but follows more of a path of least resistance and does not wind around the broken coast.

There are some stone buildings (but mostly nipa huts) at the barrios along the coast. There are no wharves or docks, although there are native jetties at some of the barrios.

#### *Roads:*

From barrio Mantang at the northern base of Pindilin Point, Route 3 is a one-lane, all-weather road south to Remedios (Del Remedio) on the north side of Port Libas. Sulat River was crossed by a vehicle ferry; wooden bridges and culverts crossed other small streams and rivers.

South of Remedios, around Port Libas to San Julian, Route 3 is a new section of road and was not properly surfaced before the war. It is classed as a one-lane seasonal road for this distance.

From San Julian to Borongan River, Route 3 is again one-lane, all-weather, with wooden bridges and culverts to Borongan River which is crossed by a concrete and steel bridge.

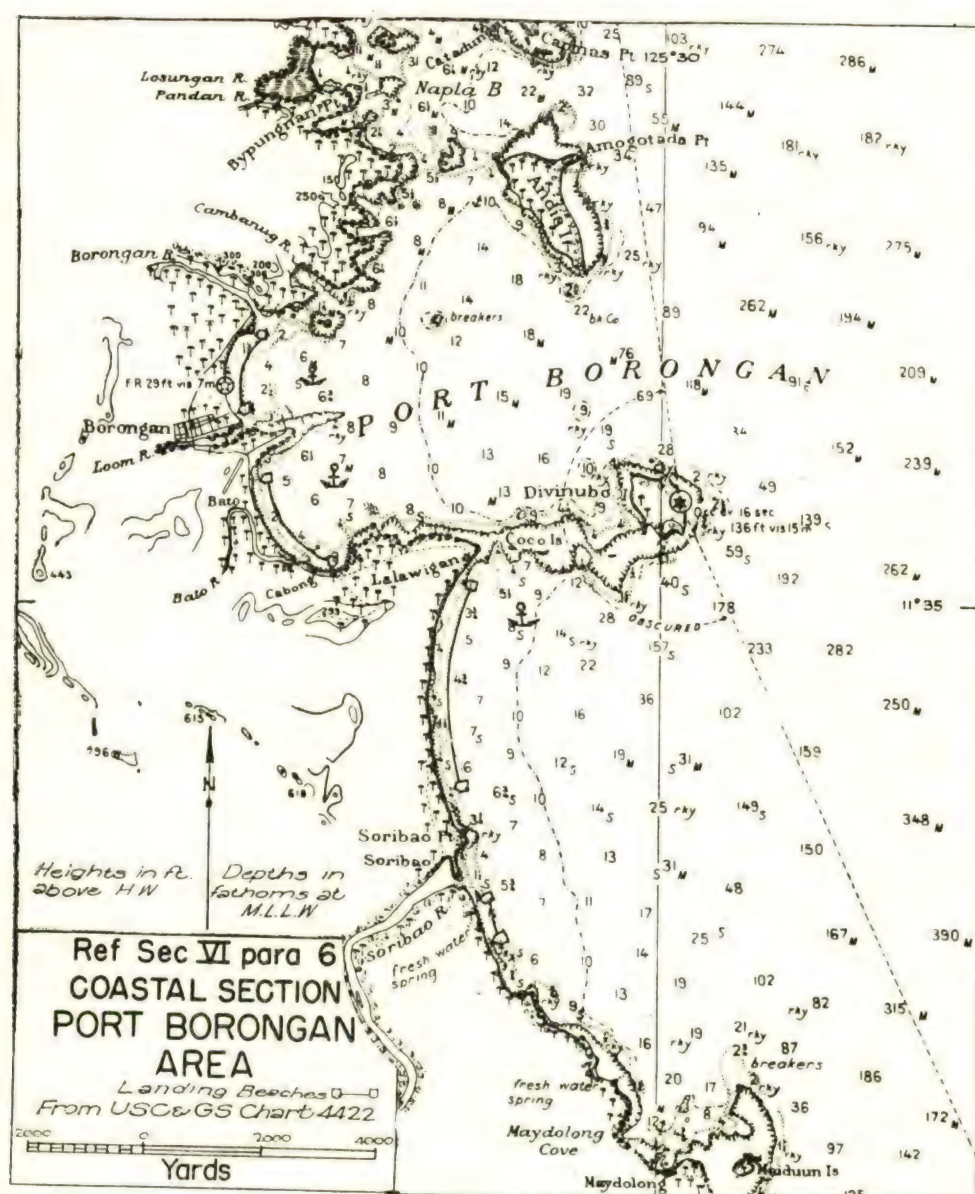


**6. Borongan River— $11^{\circ} 37' N$ ,  $125^{\circ} 26' E$ —to Panadlihan Point— $11^{\circ} 20' N$ ,  $125^{\circ} 37' E$ . (Photo 4).**

This section of coast has much fewer offshore encumbrances than that described in para 5 (above) and has several good seasonal landing beach areas. Anchorage along this section of coast, however, is in open water for the most part, and would be prohibitive except during quiet weather.

*Anchorage:*

Best anchorages are in Port Borongan, in Maydolong Cove, to the lee of Minanut Island, at barrio Llorente and in the small Nagaha Bay. At no place can anchorage be found along this coast at more than a mile from the general shoreline except at



Port Borongan and the six miles of coast south of Port Borongan. The water deepens rapidly off this coast with more than 100 fathoms of water a mile from the general shoreline.

At Port Borongan there is limited, protected deep-water anchorage of about one square mile to the lee of Andis Island. Other anchorage in the Port is in open water where a high surf runs during NE monsoon weather. The five-fathom line is from half to three-quarters of a mile from the head of the bay and averages less than a quarter of a mile from the sides of the bay. Anchorage in mud bottom is available within this area. The largest known vessel to use this port was a 9300-ton freighter (the captain reported it to be a good anchorage).

A continuous drying coral reef runs from Lalawigan Point to Divinubo Island, and boats must go around Divinubo Island to enter Port Borongan.

Along the six miles of coast south of Lalawigan Point the five-fathom line is between a quarter and a half mile from the shore and good anchorage in sand bottom



can be had along this coast in the SW monsoon season. Except in quiet weather, a rather heavy surf is encountered along this section of coast.

Maydolong Cove is very small and suitable as anchorage during SW season for smaller ships only. The cove is partially protected by a large, curved expanse of drying coral reef and the cove is outlined with drying coral reef.

Cabay Bay is open and the funnel-shape of its mouth creates an undesirable wave condition within the bay. During the SW monsoon period it would offer good deep-water anchorage. Unlike most east coast bays it is deep at its head, having three fathoms of water 200 yards from the small beach in front of barrio Cabay.

To the lee of Minanut Island is a very limited area of protected, deep-water anchorage. A narrow (200 yard) channel of water, five fathoms plus deep, separates Minanut Island from the mainland.

Some protection is afforded the anchorage in front of the good beach at Llorente by Minanut Island. The five-fathom line is about a quarter of a mile from the beach at Llorente and anchorage is in sand bottom.

The small cove behind Iniyao Island is deep (over five fathoms) to within 300 yards of its shore all around the coast, and though not suitable during NE monsoon weather, would be good anchorage for concealing large vessels during the SW monsoon period. Iniyao Island is joined to the mainland by drying coral reef, but is free where vessels would pass it entering the cove.

Nagaha Bay is very small, and over half of its total water area is reef and shoal. One or two medium vessels are all that could anchor in this small bay.

#### *Beaches and Foreshore:*

In Port Borongan the good beach at the head of the bay is split by a small peninsula and a long finger of coral which extends on out from the peninsula. The sections north and south of this dividing point are about equal in size and have the same general characteristics. In the case of the northern section of beach the five-fathom line is about three-quarters of a mile out from the beach, whereas it is only half a mile out in the southern section. The water shallows gradually from this line to the shore and, at LW, landing craft might ground 50-100 yards from the beach. The bottom is sandy and firm, however, and may be covered with an inch or two of river silt, but personnel and vehicles should be able to make the beach without difficulty. In NE weather there is prohibitive surf on these beaches when landings would not be possible.

The immediate shore and the coastal plain behind it is low, level and heavily planted with coconut palms.

The beach section beginning at Lalawigan Point and extending south for about four miles is good for landings in quiet weather. The five-fathom line is from a quarter to half a mile from the beach and LC could probably reach the beach. The bottom is firm sand, and though patches of reef are shown on USC & GS Chart 4422, informants state that native craft beach anywhere along this coast. A particularly bad reef section is at the north entrance to Soribao River and this should be avoided. For two miles north of Maydolong the beach is not usable because of wide drying coral reef. At other places along this coast waves breaking on the reefs will give an indication of their presence.

The foreshore and coastal plain behind this section of beach is low, level and heavily planted with coconut trees.

The coast south of barrio Maydolong to the town of Llorente is unsuited for beach landings. The coastal reef is wide, dries at LW and in many places is backed by mangrove swamp. The reef is broken only where small rivers empty into the ocean.

The foreshore is a combination of mangroves and coconut trees, with the mangrove fringing the coast backed up by some coconuts and other scrub growth.

In front of Llorente a section of beach about a mile long is a good seasonal landing area. Some protection from the NE monsoon winds is afforded by Minanut Island. The five-fathom line is about a quarter of a mile from the beach and LC should be able to reach the beach with no difficulty. The sand is firm and white making this beach easy to identify. The town of Llorente is at the north end of the beach at the mouth of Lanang River.

In front of the town the foreshore is grass-covered while coconut trees line the shore along the rest of the beach. The coastal plain behind the beach is low and level of firm sandy soil. The road is 150 yards from the beach and parallels it.

The coast south of Iniyao Island for five miles to Tugnug Point consists of rocky cliffs 40-90 feet high with deep indentations filled with coral reefs. This coast is fringed by steep coral reefs, in some places to a distance of nearly a quarter of a mile; these reefs gradually narrow to the coast and finally disappear at Tugnug Point. The cliffs are nearly perpendicular and the tops are covered with bushes and small trees. A short distance inland the terrain rises to 300-500 feet and is heavily wooded.



South of Tugnug Point is a small cove about a quarter of a mile in extent. This cove is very deep and the head is filled with coral. From this cove the coast runs southward for nearly a mile to Agdan Point and consists of perpendicular steep-to cliffs whose bases are much undermined and whose faces are worn into fantastic shapes by wave action. The tops of these cliffs are 25-50 feet high and are, in general, sparsely covered with scrub growth.

The cliffs at this point of the east coast of Samar, together with the high ground behind them, are prominent from both north and south.

The shores of Nagaha Bay are generally low and coral fringed. A small beach is in front of the barrio Nagaha. Back of the coral and mangrove coasts of Nagaha is some hilly country planted mostly with coconuts and scrub.

#### *Hinterland:*

Anywhere along this section of coast high ground, heavily forested, is encountered two miles inland. In many places this high ground again comes right down to the coast. Movement, even up and down the coastal area is difficult, and the road along the coast has some steep grades.

At Port Borongan is one of the largest level areas along this section of coast. It is the site of one airfield and the largest and most important town along the east coast as well as having sufficient area for the development of an additional airfield in the area. From Borongan River to Soribao River is one of the best coastal areas for development along the east coast.

The coastal plain behind barrio Llorente, though small, is level and firm. The hills behind this plain are heavily wooded.

Around Tugnug Point the high ground is close to the shore and forms the cliffs previously mentioned.

#### *Rivers:*

Several large rivers emptying along this section are the Borongan, Loom, Bato, Soribao, Cabay, Lanang (Llorente) and Tongguip.

Borongan River has been discussed in the previous paragraph.

Loom River is navigable for small boats for a known distance of about a mile. Beyond this no information is available. The river can only be entered at HW.

Bato River is known to be navigable for boats of less than 3ft draft for about a mile from its mouth. It is entered only at HW however.

Soribao River is the largest river in the area but very little is known about it. The chart shows it to be nearly closed at its mouth by a small peninsula jutting from its northern bank. Once entered it is undoubtedly navigable by small boats for several miles.

The Cabay, smallest of the rivers mentioned, enters the ocean at the head of Cabay Bay. It is believed not navigable.

Lanang (Llorente) River is said to be five feet deep just inside its mouth. Natives used this river for loading and unloading their boats. Its mouth is nearly closed by a sand bar, but water deep enough to permit entrance to the river at any tide is close to the steep shore along the north bank of the river mouth. An estimated five to six feet of water is available here at LW in a channel 75-100 feet wide.

Tongguip River is at the south end of the beach at Llorente and its course winding through the area discounts the possibility of using this coastal plain as an airfield site. Its navigability is not known.

There are several other minor streams along this coast of which information is totally lacking.

#### *Towns and Barrios:*

Borongan and Llorente are the two largest towns and were municipal seats of government. Borongan is the most important town on the east coast of Samar. Here was located the best airfield on this coast as well as the main army cadre post. The buildings in the town were of strong construction generally—concrete, stone and lumber were used. Three concrete and steel bridges in the vicinity and a substantial concrete pier facilitated communications to the town. The airport and cadre were across Loom River from the town. The road from the pier passed the airport and cadre before crossing Loom River to the town. A navigational light was on the beach north of the town about 400 yards. The stone church is the first building visible when entering the bay.

Llorente is mainly a barrio of nipa huts. Copra was the main export of this small barrio.

There are numerous other small barrios along the coast, none of which is important.

#### *Roads:*

From the steel and concrete bridge over Borongan River, across similar bridges at both the Loom and Bato Rivers south to Umawas (a small coastal barrio), Route 3 is a good, one-lane, all-weather road. A wooden bridge crosses Soribao River.



South of Umawas, Route 3 is one-lane, seasonal, for the rest of its distance along this coast.

Aside from the one-lane, all-weather section around Borongan, this road is not good. It has several side cuts and fills and steep grades. Unless it has been maintained by the Japanese it would not be usable for MT without considerable improvement.

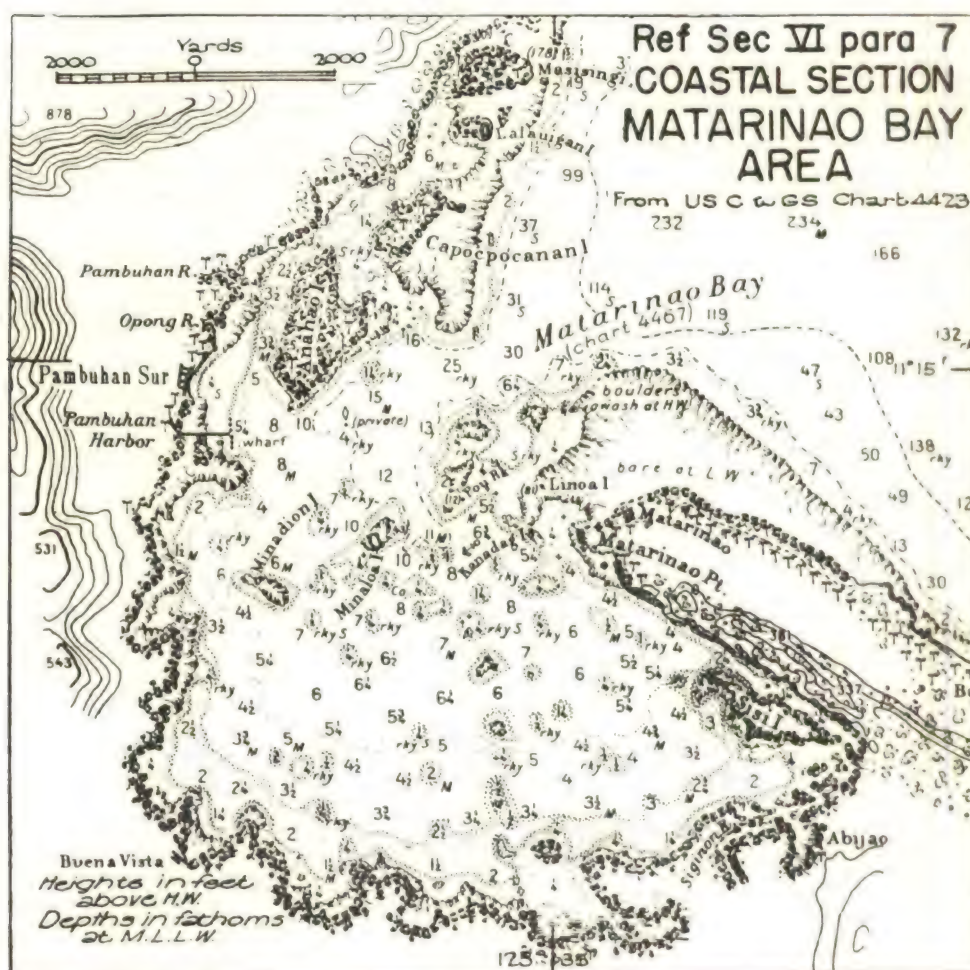
A vehicle ferry crossed the Lanang (Llorente) River, but other small rivers and streams were crossed by wooden bridges and culverts.

**7. Panadlihan Point—11° 20' N, 125° 37' E—to Sungi Point—10° 55' N, 125° 50' E. (Photos 6-10).**

There is not more than a total mile of beach area suitable for landing in this section.

*Anchorage:*

The only protected anchorage is in Matarinao Bay. All other anchorage would be off the coast from half to one mile in very deep water. Except in Matarinao Bay



there is no occasion to anchor along this section of coast since the shores are inaccessible to small boats.

In Matarinao Bay are many small reefs and shoals which are a definite hazard to navigation. Large vessels that used the Samar Iron Mining Coy dock were guided to the dock by privately-owned buoys. Sufficient area for anchorage is available within the five-fathom line for several large vessels. Entrance to the bay is restricted by a large drying coral reef extending north from Matarinao Point and another drying reef extending down from Capococanan Island.

*Beaches and Foreshore:*

Beginning at Panadlihan Point the coast to barrio Pambuhan Sur is fringed with drying coral reef which at places is half a mile wide. At barrio San Miguel the reef becomes detached from the beach and runs out into Matarinao Bay embracing several small islands.

At Pambuhan Sur is a section of poor beach about 600 yards long that is approachable only at HW. At LW shallow water would ground boats of more than 2ft draft 600-700 yards from the beach. The bottom of the bay at this beach is of a sandy nature but whether it would support other than foot troops is doubtful. The



beach is narrow, but the ground behind it is low and it is not difficult to get from the beach on to the barrio site inland.

Aside from a very small (400ft) section of coast that can be used for landing troops or vehicles on Matarinao Point there is no landing beach in Matarinao Bay other than those already mentioned. The shores of this bay are almost completely fringed with mangrove swamp and drying coral reefs.

Along the SW coast of the peninsula on which Matarinao Point stands, is the only other place that landings could be made in Matarinao Bay. This place is not recommended for assault landings, but rather to be used for possible development of Matarinao Point at a later stage of operations.

Matarinao Bay is full of shoals and reefs and is not ideal anchorage for this reason, but it does have year-round anchorage area and since it is the largest bay on the east coast it cannot be overlooked although it has its drawbacks. A large wooden dock totalling over 500 yards in length was just south of barrio Pambuhan Sur and was the property of the Samar Iron Mining Coy. It had railway trackage and a long continuous belt conveyor incorporated with the dock.

From Matarinao Point SE along the coast there are no beaches. The coast trends SE for about 27 miles, forming a narrow peninsula between the Pacific and the shoal bay westward of the town of Guiuan. A chain of islands consisting of Calicoan, Leleboon, and Candolu extend SE forming a prolongation of this peninsula which, from a distance, appears to be part of it. The passages between the peninsula and the islands and also those between the islands are narrow and shoal, and bare in places at LW.

The most prominent feature of this section of the coast is a bold coral ridge about 400 feet high that reaches from Matarinao Point to Sungi Point, the southern extremity of Candolu Island. At several places it is broken by steep gaps and at one place it disappears for more than a mile, but the general impression is one of uniform height, smooth, even skyline and vertical sea faces more than 300 feet high, usually covered with bushes, but at times entirely bare. This ridge is remarkable for its length, its narrowness (only 300-650 yards wide), and its abrupt, steep face, both in front and where it is broken by passes through it. On the western side the slope is gentle.

Between this bold ridge and the coral-fringed shoreline is a low, level, coastal plain varying in width from about 200 yards to nearly threequarters of a mile, its widest point being south of Matarinao Point along the peninsula projecting into Matarinao Bay.

#### *Hinterland:*

Behind Matarinao Bay the terrain is hilly and heavily forested. The Samar Iron Mining Coy mine was located in this hilly country about five statute miles west of their dock. The coastal plain between the shore and the steep hills is gently rolling and also heavily forested. South of Matarinao Point, the steep cliffs inland from the coast have already been described. They taper off gradually to a valley, which, in the section immediately south of Matarinao Bay, again rises to mountainous terrain. On the lower peninsula, the terrain remains low and generally level over to the west coast of the peninsula. This is also true of the islands south of the peninsula.

#### *Rivers:*

There are no large rivers in the area. There is no information available regarding several small rivers emptying into this section of east coast.

#### *Towns and Barrios:*

Hernani, Salcedo and Guiuan are each seats of municipal government. Pambuhan Sur is the largest barrio in the section concerned and had some frame buildings. A few Chinese stores had concrete lower floors with wood or nipa upper floors. At the mining camp were many frame buildings comprising the quarters for the workers. By local standards sufficient quarters were available for about 2000 natives. At Pambuhan Sur was a hospital which could care for 60 to 80 patients.

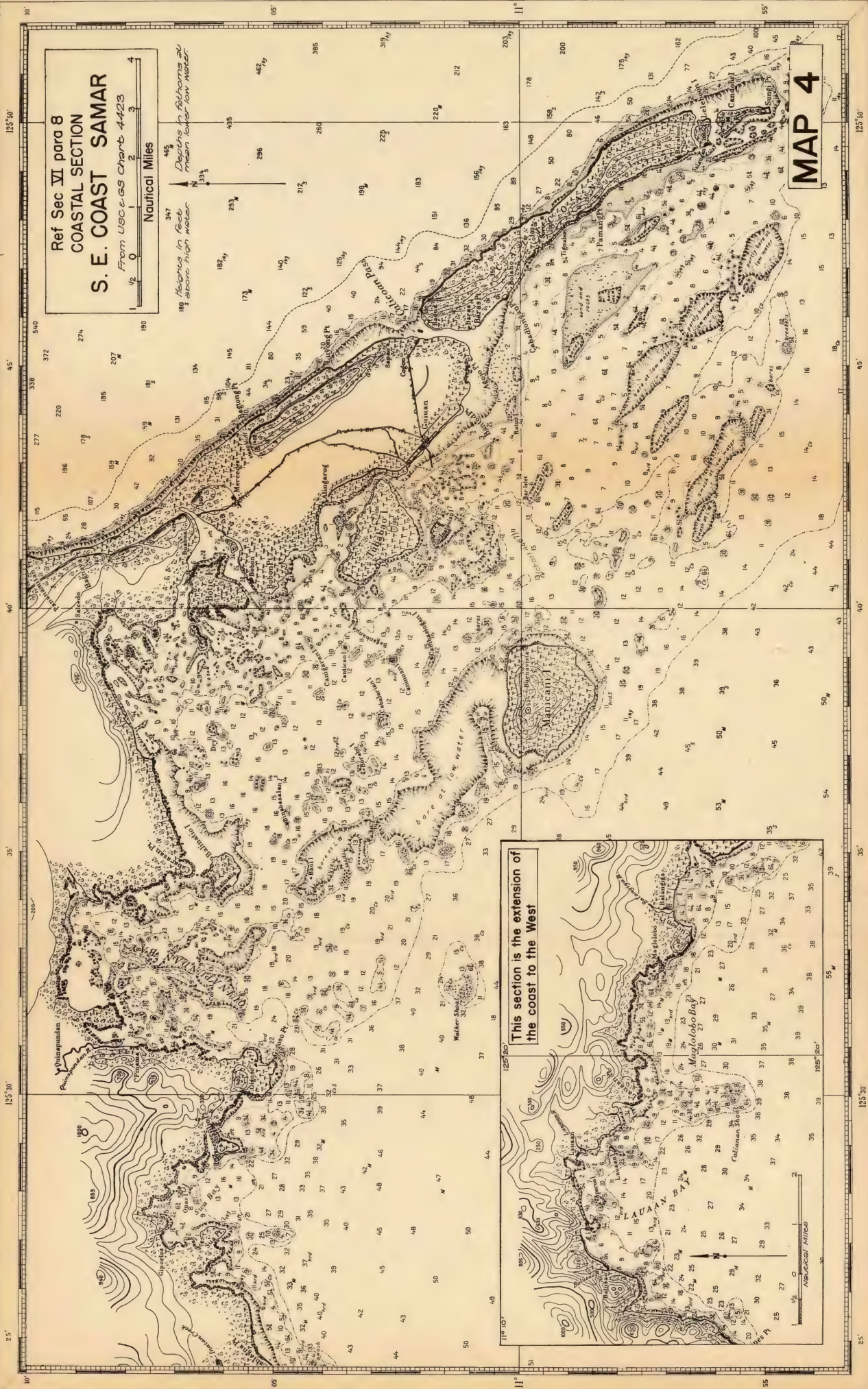
#### *Roads:*

Route 3, coming south from Borongan, ends at the small barrio San Miguel on the north coast of Matarinao Bay. It is a one-lane seasonal road.

The small barrio Calutan, about four statute miles south of Pambuhan Sur, is the terminus of the section of Route 3 which goes to Guiuan on the SE tip of the peninsula. From Calutan the road is one-lane, all-weather to Naga where it splits, one branch continuing SE, and the other running south to barrio Sta Margarita. The two branches rejoin about two statute miles east of Sta Margarita and continue one-lane, seasonal, to Salcedo. From Salcedo to Guiuan the road is one-lane, all-weather.

Pambuhan Sur had no road connection north or south.





Ref Sec VI para 8  
COASTAL SECTION  
**S. E. COAST SAMAR**  
From USCG Chart 4423

Nautical Miles

Heights in feet  
above high water

Depths in fathoms  
mean lower low water

**MAP 4**

This section is the extension of  
the coast to the West

Nautical Miles



125° 50'

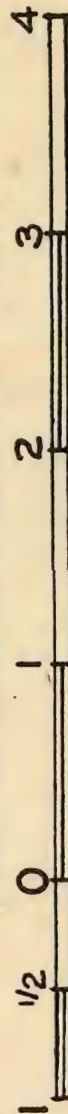
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10'

05'

# Ref Sec VI para 8 COASTAL SECTION S. E. COAST SAMAR

From USC&GS Chart 4423



Nautical Miles

180 Heights in feet  
s above high water.

Depths in fathoms at  
mean lower low water.

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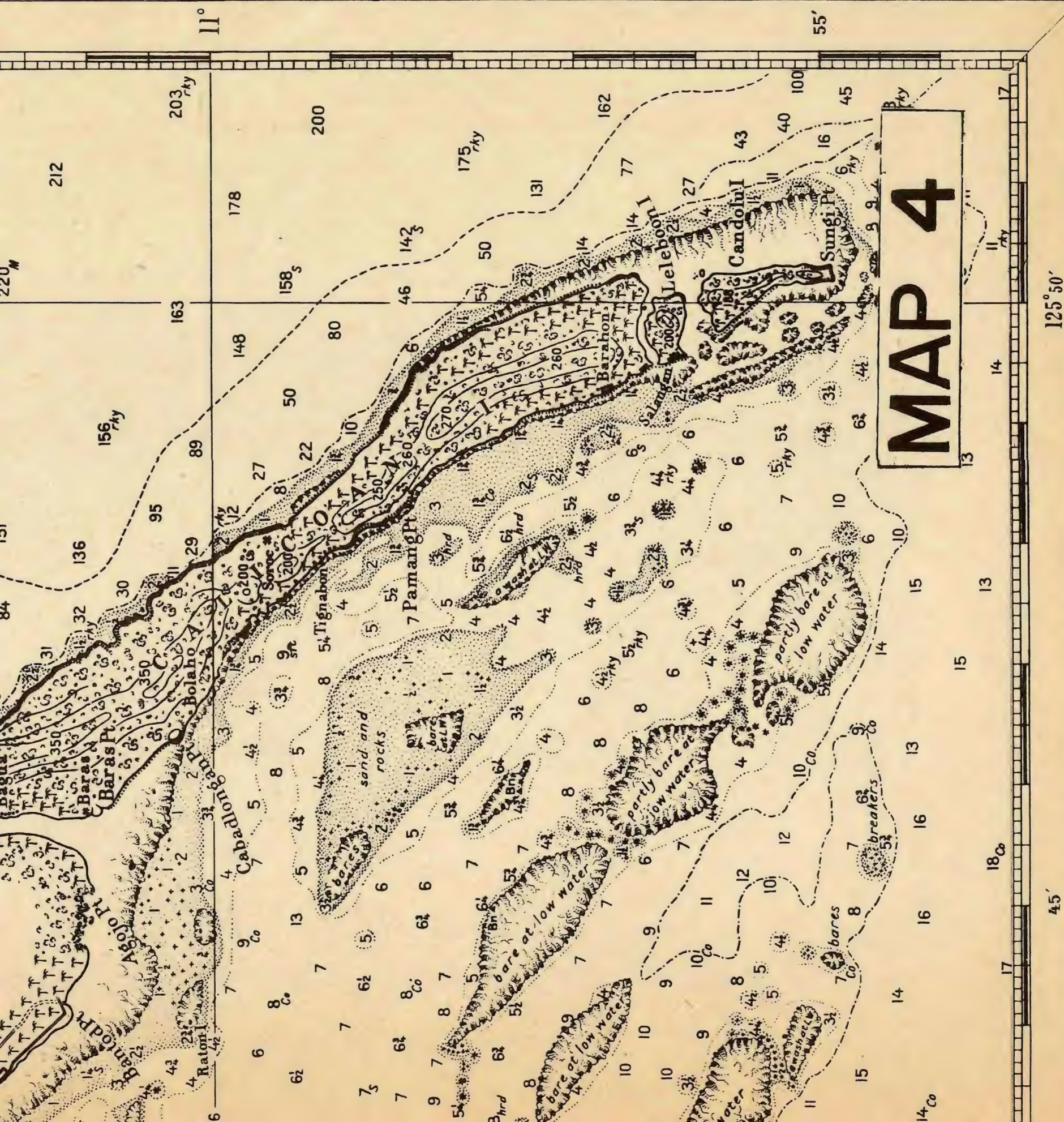
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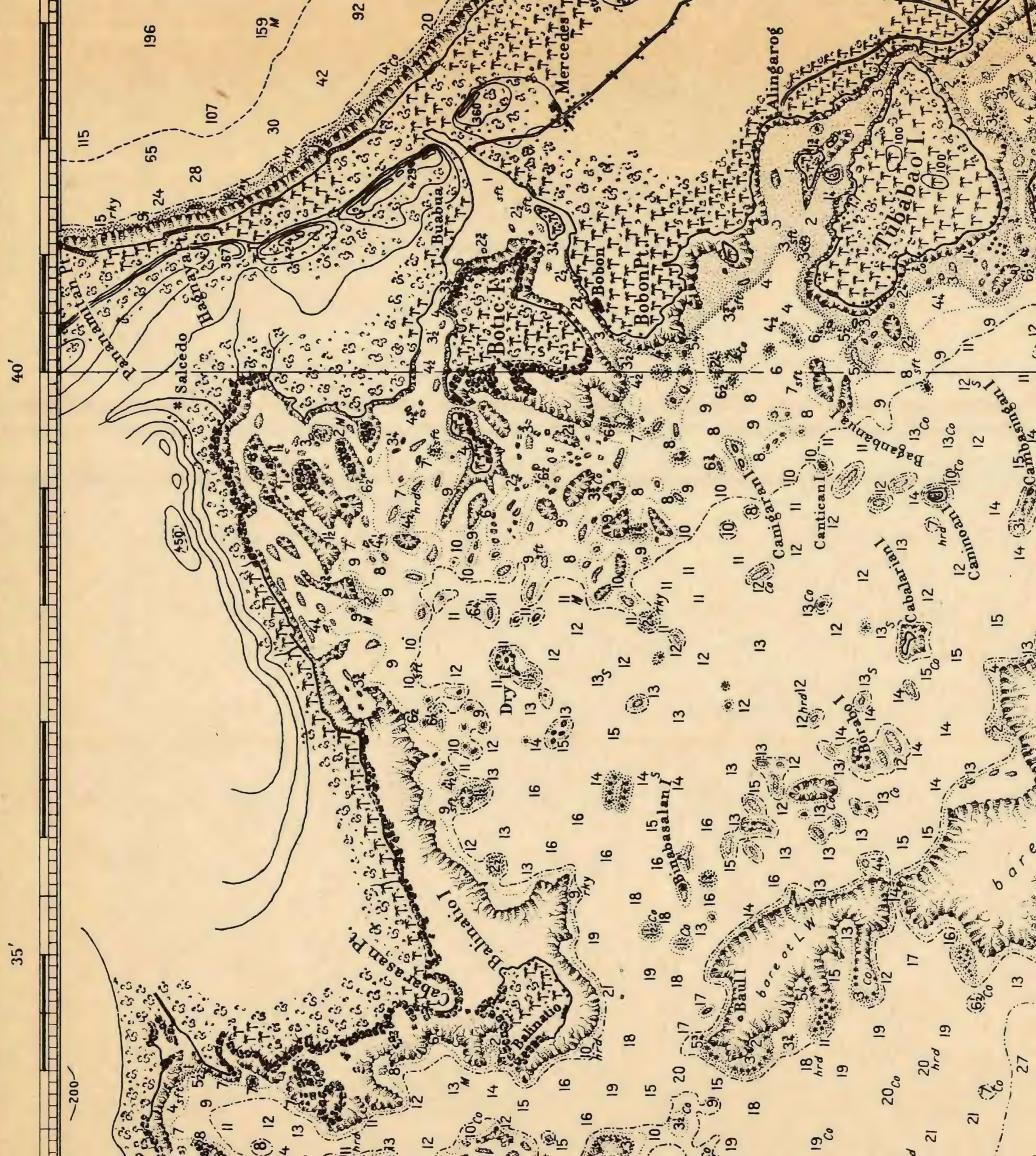
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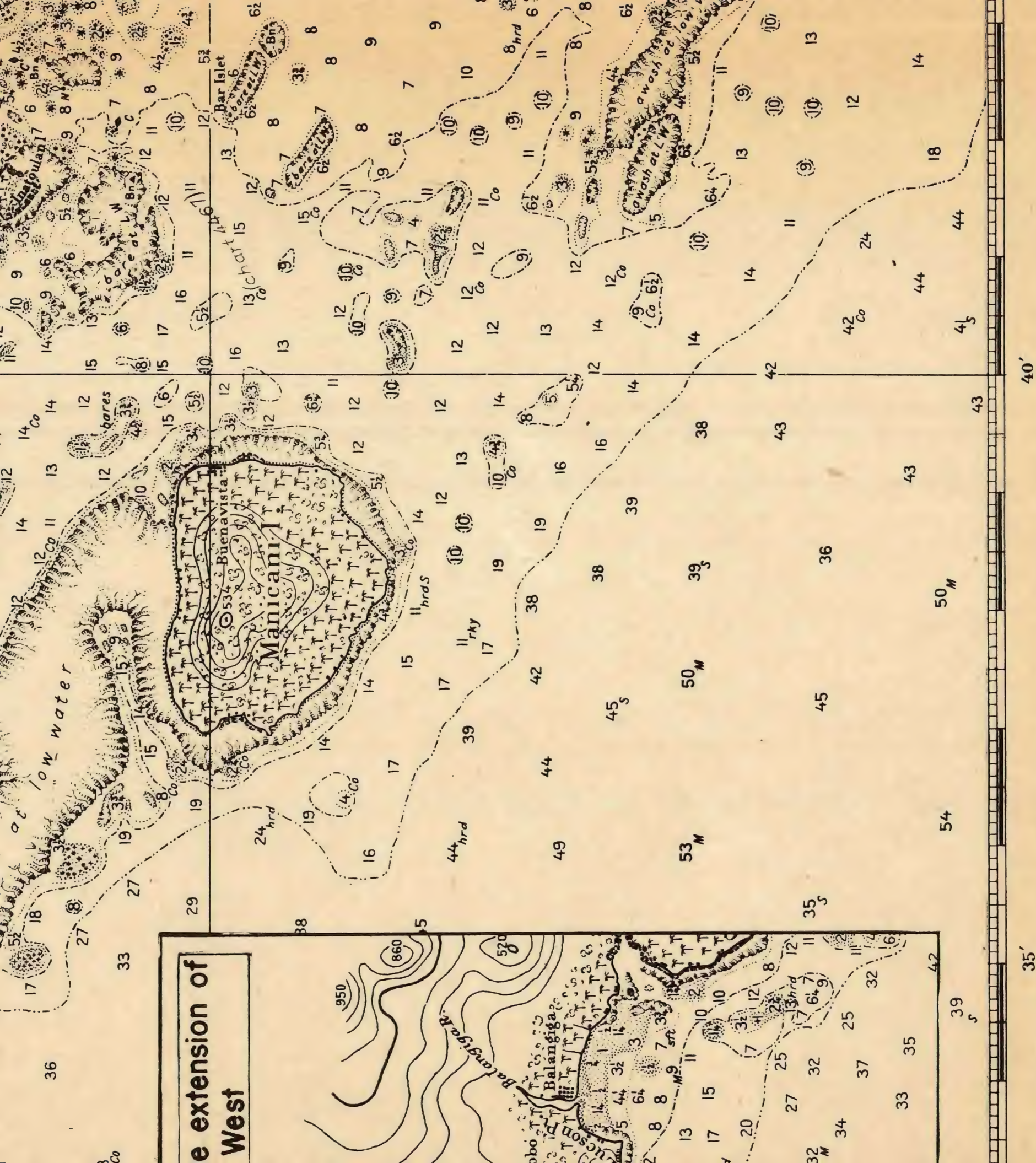












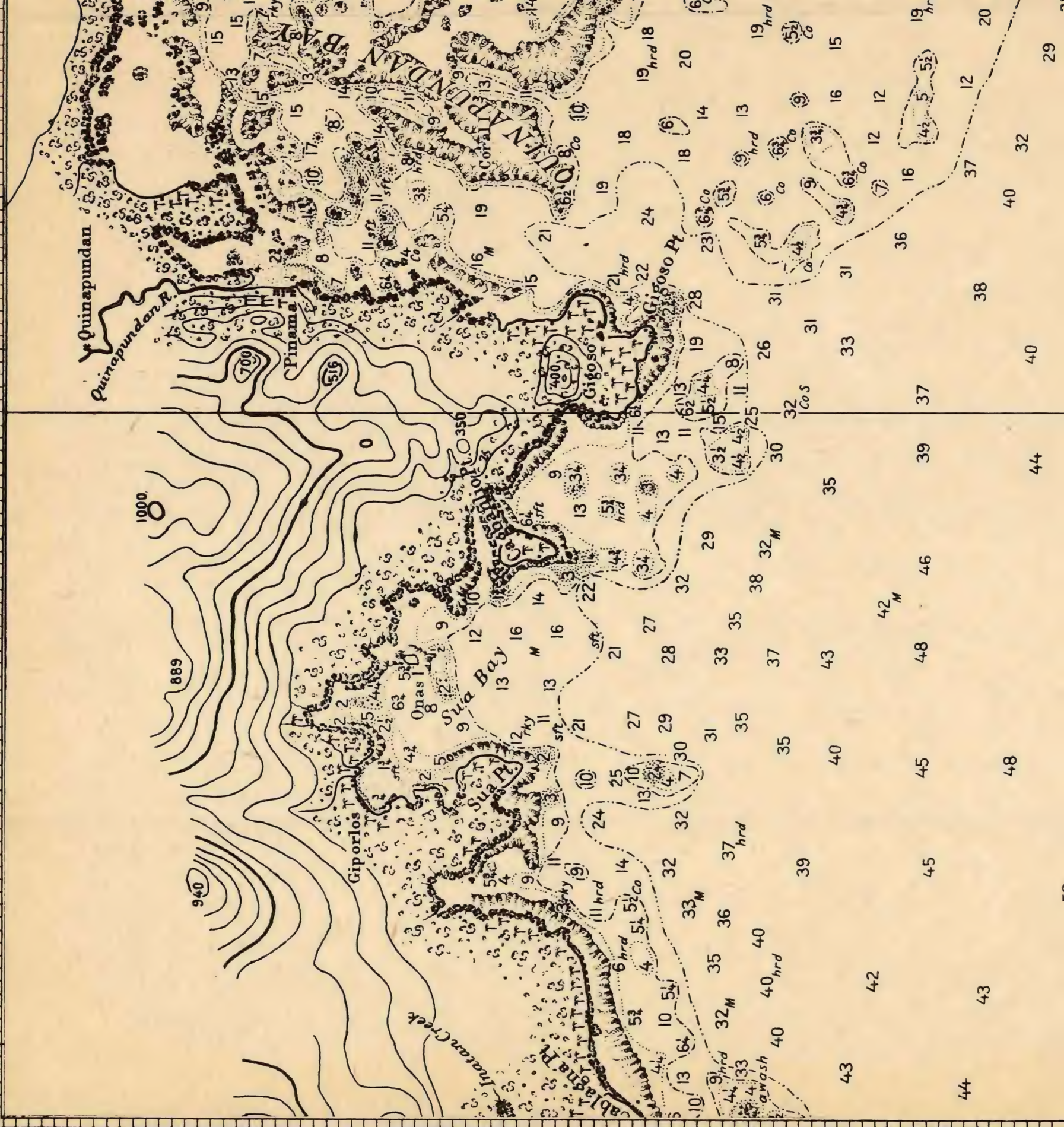


25'

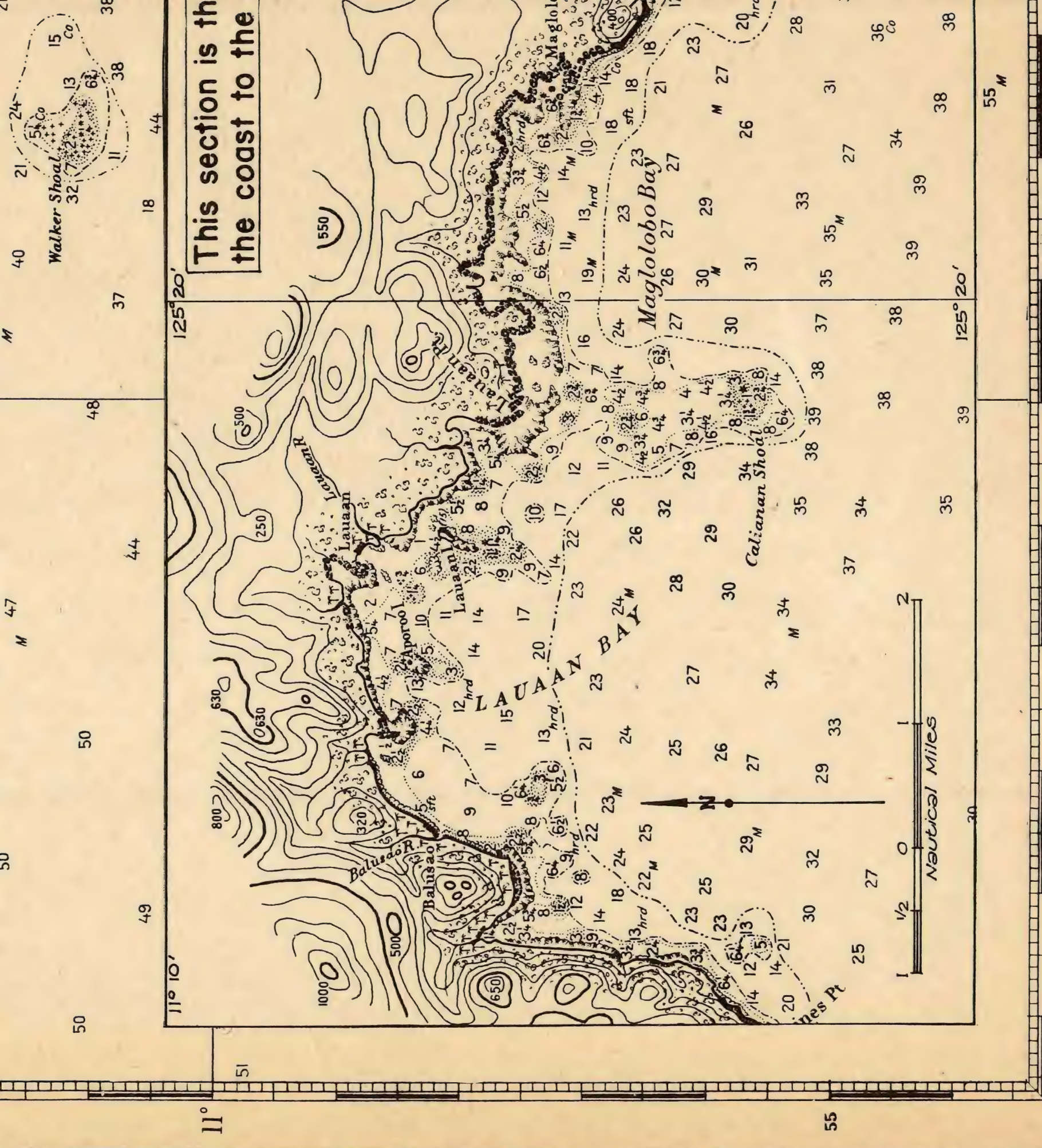
125°30'

10'

05'







This section is the  
the coast to the

125° 30'



**8. Sungi Point—10° 55' N, 125° 50' E—to Capines Point—11° 05' N, 125° 14' E. (Map 4).**

This is by far the most dangerous section of coast on the whole of Samar Island. Small coastal steamers and launches and native boats were the only craft that ever attempted to navigate through any of the offshore conditions to the causeway at Guiuan. The coastline is very irregular and fringed with considerable coral and mangrove.

An understanding of the conditions involved can best be understood by reference to Map 4, which is a section of USC & GS Chart 4423.

From Sungi Point to Cablagna Point there are no beaches suitable for amphibious landings. In front of the few native barrios along this coast will be found small beaches that were used by them to haul out their boats, but approaches to these beaches are so difficult that they have no tactical importance.

*Anchorage:*

Protected anchorage in deep water is available throughout the reef area off this coast.

At Guiuan, small vessels anchored just off the end of the causeway in about four fathoms of water. For other anchorage in the area reference is again made to Map 4.

Between Manicani Island and Tubabao Island anchorage can be had that is protected from the high seas of either monsoon, but not from strong winds.

West of Cablagna Point anchorage protected from NE monsoon seas can be had in Maglolobo Bay or Lauaan Bay. Off barrio Balangiga the five-fathom line is about half a mile from the beach in front of the barrio, and apart from a small reef with three feet of water shown on the chart and the reef condition off Cablagna Point, anchorage can be had anywhere out from this beach.

Calianan Shoal divides Maglolobo Bay and Lauaan Bay, and is the only danger when proceeding from one bay to the other. There are deep-water channels through this shoal.

*Beaches and Foreshore:*

Aside from the beach at barrio Balangiga, there are no beaches suitable for amphibious landings.

From Sungi Point to Capines Point, the foreshore is a combination of reef-bound sandy terrain planted with coconut trees or scrub and fronted with mangroves for about half the total area. Information is lacking concerning this section of coast.

The beach at Balangiga is nearly a mile of firm sand. The beach is fairly wide at LW but is reported to be "quite narrow" at HW. There is shallow water either side of the mouth of Balangiga River, but the ends of the beach are deep enough to allow LC to approach to within 100-200 feet of the shore before grounding. The three-fathom line is about 600 yards from the beach and shallows gradually to the beach.

The shore is a low, level, coastal plain planted with coconuts and some *abaca*. If the beach is as narrow as reported at HW, a rather steep but short climb may be encountered by vehicles landed at LW.

*Hinterland:*

The hinterland of the small islands of Candolu, Leleboon and Calicoan, off the tip of the Guiuan Peninsula is high and forested.

From Agojo Point, the southernmost tip of Guiuan Peninsula, to the deep bight which almost cuts the peninsula off from the mainland, is a rather large, rolling forested plain with a belt of coconut trees along the coastal sections. The area between Guiuan and the small barrio Cogon, on the east side of the peninsula, has been covered as possible airfield site in Section XI.

Along the south coast of Samar the hinterland is relatively very high and leaves a narrow, if any, coastal plain of coconut trees and scrub. The high hills are steep and heavily overgrown and movement over them would be difficult even for foot troops.

*Rivers:*

Balangiga River, the largest river in this coastal section, empties just west of the town of Balangiga.

Other named rivers of lesser importance are the Quinapundan, and the Lauaan, of which no information is available.

*Towns and Barrios:*

The only important town not previously covered is Balangiga, a municipal seat of government. It is a small barrio of nipa houses and has no important installations.

*Roads:*

Running east of Balangiga and skirting the high hills is a section of one-lane, all-weather road that ends at the small barrio of Giporlos on Sua Bay. The road is about five statute miles long.



Extending west of Balangiga about 6½ miles to barrio Lauaan, on Lauaan Bay, is a section of one-lane seasonal road. This road has been reported to exist although not confirmed.

**9. Capines Point—11° 05' N, 125° 14' E—to Binatac Point—11° 16' N, 125° E.** (Photos 15, 16, 17, 18, 19, 20).

This section of coast embraces the reef-free, steep-to high eastern shore of San Pedro Bay and the shoal low and level shore of the head of the Bay.

From Capines Point to the reef area off Calogangan Point, the coast is relatively free of reefs offshore and the high mountainous inland country rises steeply from the shoreline.

From Calogangan Point around the head of San Pedro Bay, the water offshore becomes very shallow, the one-fathom line being well over a mile from the shore around Jinamoc Island. The shore in this area begins to level off at Calogangan Point until near Basey the low, rolling coastal plain stretches for miles inland and all up and down the head of the bay. There is very little level terrain other than the rice paddy area and heavy construction equipment would be required for airfield development.

*Anchorage:*

San Pedro Bay offers considerable good deep-water anchorage, but numerous small detached reefs throughout the bay make navigation a problem. Transports unloading troops and supplies for landings on the south coast of Samar along the head of San Pedro Bay would have to anchor about four miles from the shore, making long hauls in landing craft.

Anchorage offshore near Calogangan Point would be in quiet water during the NE monsoons, and LC would not have to travel more than a mile to shore. The terrain is low hills at the shoreline, however, and no road is available for transporting landed supplies overland.

From Calogangan Point south to Capines Point anchorage is available anywhere within half a mile of the coast, but high ground coming down to the beach makes the landing of troops or supplies extremely difficult and movement inland impossible.

*Beaches and Foreshore:*

From Capines Point north along the shores of Samar to just short of the small barrio Inabilas (Nouvelas Or) information is completely lacking concerning the conditions of the beaches. USC & GS Chart 4423 shows several small sections of reef-free coastline, mainly at the heads of the many small indentations in the coast, that undoubtedly could be used by LC. Deep enough water for LC is available close to the shore anywhere from Capines Point to Calogangan Point. From Calogangan Point to barrio Inabilas (Nouvelas Or) the water offshore is shallower, the one-fathom line increasing in distance from the beach from about 100 yards at Calogangan Point to nearly three-quarters of a mile in front of Inabilas. At Calogangan Point several small offshore islands called the Camoropudan Islands have some shallow water around them and should be avoided.

The foreshore from Capines Point to Calogangan Point is fringed with a narrow belt of coconut trees backed by scrub and other forest growth. From Calogangan Point to Inabilas (Nouvelas Or) some mangrove is along the coast backed by scattered coconut trees, scrub and other forest growth.

Along the shores of Samar that form the head of San Pedro Bay are some good HW landing beaches and three sections of beach suitable at any tide. The HW beaches are from just south of Inabilas (Nouvelas Or) west to a point on the coast one mile west of Basey. The beaches west of this point are suitable at any tide and have the added advantage of a good road about half a mile inland.

The foreshore consists mainly of coconut tree-planted sandy soil, low and only a few feet above the beaches.

Capunluran Island is mainly mangrove swamp and has no suitable beaches. A slender fork of Basey River divides it from the mainland.

Behind the good landing beach a mile west of Basey is some high ground that would be difficult for MT. In fact, the terrain from immediately west of Basey over to San Juanico Strait is very hilly with the prominent Mt Danglay a mile north of Binatac Point. All of this terrain will support MT, but vehicles will have to wind their way between the hills. This coastal high ground is practically limited to that area between the shoreline and the road, and once the road is reached, the going will be much easier. Tracked vehicles should precede MT to clear a path through the scrub and underbrush which may be dense in places.

*Hinterland:*

Hinterland from Capines Point to Inabilas is high, rugged and heavily forested. Movement inland more than a mile would be impossible for anything but foot troops. From Capines Point to Calogangan Point it is doubtful if either wheeled or tracked vehicles could move in any direction. The coastal plain widens out between Calo-





S A M A R

125°

30'

25'

11° 20'



Heights in feet above M.W.  
Depths in fathoms at M.L.L.W.

Currents in San Juanico Strait  
Flood sets North  
Ebb sets South  
Between Guintiguian and Tinsogan Pts.  
the current attains at times a strength  
of from 4 to 5 knots, forming in places  
violent eddies and tide rips.

MAP 5

Ref Sec VI para 10  
COASTAL SECTION  
SAN JUANICO STRAIT  
From USC & GS Chart 4420  
1 1/2 0 1 2  
Nautical Miles

TACLOBAN



gangan Point and barrio Inabilas (Nouvelas Or). Behind the coast at the head of San Pedro Bay the rolling coastal plain extends for four or five miles inland and is planted mostly in coconuts, *abaca* and rice. At the western end of this section, near the entrance to San Juanico Strait, the hinterland is high and mountainous with considerable forest growth.

#### *Rivers:*

Only significant river in this area is the Basey. It has a wide delta area which embraces the mangrove island, Capunluran. The entrance to this river at Basey is not nearly as wide as is shown on the map or chart, and if this fork is navigable at all it is by the smallest of native boats. The eastern fork, or main entrance, is wide, but depths within the river are not known. It can, however, be entered at HW only and, if typical of other large Samar rivers, may prove to be navigable for LC for some distance. If beach landings are affected east of this river mouth, the river will have to be crossed to reach the town of Basey and LC might possibly be used as ferries on this river.

The only other named river shown on maps in this coastal section is the Legaspi, on which there is no information. Other small rivers feed into the Basey, and several short streams empty into the east coast of San Pedro Bay.

#### *Towns and Barrios:*

Basey is a municipal seat of government and the largest town in this area. It has several permanent and semi-permanent buildings of stone and wood. The church is the most prominent building in town and there was a municipal school and other municipal buildings centered near the main road entrance to the town. Several small jetties were located along the Basey River side of the town behind which were many small *bodegas* and merchant houses. The town comprised mainly native nipa houses in an area of about 50 blocks with coral and gravel surfaced streets. It was not a direct exporting center, all of its trade being carried on at Tacloban (Leyte), SW across San Pedro Bay from Basey.

San Antonio, about  $4\frac{1}{2}$  statute miles west of Basey, is the largest barrio in terms of population in this coastal section, although the barrio area is quite small. It is on the road (Route 3A) running west from Basey, to the vehicle ferry just west of San Antonio.

There are numerous small barrios in this area, although the most inhabitants were scattered throughout the countryside. The municipality of Basey is the most heavily populated of Samar Province.

#### *Roads:*

The only roads in this area are the two roads branching west of Basey, one running west to the ferry crossing for Tacloban (3A) and the other running NW to barrio La Paz, Samar terminus for the inter-provincial ferry connection of Route 1.

Only the section of road going west to the ferry crossing has been verified as one-lane, all weather, although the NW spur appears on air photographs to be as good. (See Photo ).

### **10. Binatac Point— $11^{\circ} 16' N$ , $125^{\circ} E$ —to Dulugdug Point— $11^{\circ} 31' N$ , $124^{\circ} 49' E$ . (Map 5; Photos 21, 22, 23).**

This section of coast includes only that bordering the San Juanico Strait and its approaches. It is totally unsuited for tactical beach landings and in general is inhospitable and unsuited for any amphibious operations.

The Samar shoreline along San Juanico Strait is low and heavily fringed with mangrove swamp for most of its extent. Mt Danglay is the most prominent high ground in the area and is just north of Binatac Point at the southern entrance to San Juanico Strait. High ground frequently comes down close to the shore, and in other places rice may be found growing in small cleared patches.

Secondary growth and scrub are the main types of vegetation found along the shores behind the mangrove. Coconut trees are few and scattered and there is practically no good construction timber until back in the mountainous terrain inland.

#### *Beaches and Foreshore:*

There are no beaches that can be used for military purposes in this section. Throughout San Juanico Strait there are no sand beaches and the mangrove-free sections of coast are fronted by mud bottom and swift current.

From the Janabatas Channel mouth to Dulugdug Point, the coast is steep-to with narrow sandy beaches but steep, high hills come right down to the beaches, making movement inland difficult for foot troops and impossible for vehicles. These high hills (1100 feet) are steep and heavily overgrown and offer an excellent position from which to guard the northern entrance to San Juanico Strait.

The foreshore is mostly a band of mangrove swamp of varying width, fronting a low, coastal plain broken by fingers of high ground which in places comes close to the shores of the strait.



#### *Hinterland:*

Behind the terrain bordering San Juanico Strait, varying in width of from a few hundred yards as at Mt Danglay, to two or three miles as at Mansulung River delta area, the terrain becomes high and mountainous, typical of the general inland terrain throughout Samar.

#### *Rivers:*

The two largest rivers in this area are the Mansulung and the Silaga, both navigable for limited distances by shallow draft boats. Both rivers have heavy mangrove swamp on either side for several miles from their mouths. Information beyond that shown on the nautical charts and C & GS maps, is lacking, but ships' captains who have used San Juanico Strait say that the USC & GS charts (Nos 4420 and 4464) are very reliable.

#### *Towns and Barrios:*

Due to poor communications, lack of suitable beaching areas, and generally inhospitable terrain, the barrios in this area are small and unimportant. Some rice and limited amounts of copra were the main exports of the small barrios along the coast.

#### *Roads:*

At La Paz, Route 1, the inter-provincial road, extended north to Calbiga, Catbalogan, Calbayog on the west coast and Catarman and Allen on the north coast. It was a one-lane, all-weather, road and was one of the best roads on the island. A vehicle ferry carried motor cars, buses and trucks across San Juanico Strait from Guintiguian (Leyte Island) to an unloading dock at La Paz. A section of one-lane seasonal road also branched SE at La Paz and went to Basey on the south coast.

### **11. Dulugdug Pt—11° 31' N, 124° 49' E—to Anas Pt—11° 47' N, 124° 52' E.** (Map 6; Photos 24, 31, 32, 33, 34, 35).

Along this section of coast the only areas possible for LC are the beaches in front of, and to the north of, Catbalogan.

Maqueda Bay, one of the most famous fishing banks in the Philippines, is the most expansive area of shoal water around Samar Island. The shoal water extends south of Maqueda Bay into Villareal Bay where it is almost as extensive.

Laguinit Bay, south of Villareal Bay, is also filled with shoal water which encompasses the small islands of Guintarcan and Lamingao, between Laguinit Bay and Villareal Bay.

#### *Anchorages:*

The only anchorage area in this section suitable for large transports or vessels is at Catbalogan. The five-fathom line at Catbalogan is about a mile and a quarter from the shore in front of Catbalogan and is in a limited area. Some protection from the SW monsoons can be had to the lee of the small islands off the coast, and the whole area is sheltered from the NE monsoons. Anchorage in Zumarraga Channel is available for vessels not immediately engaged in discharging cargo. This anchorage is well protected from either monsoon, although trade winds may cause rough water at certain times of the year.

#### *Beaches and Foreshore:*

From Dulugdug Pt NE along the coast to the SW entrance to Laguinit Bay, there are no suitable landing beaches, although the water is deep close to shore. Mangrove fringes about half of this coast and there are some small patches of coral reef.

The foreshore consists of a narrow forested coastal plain that leads to mountainous terrain about a mile inland. This small plain is isolated since the high ground behind it comes down to the coast steeply at either end of the plain.

The coast from the SW entrance to Laguinit Bay to the town of Catbalogan is totally unsuited for amphibious operations because of (a) the shallow water offshore throughout, (b) the wide band of mangrove swamp that fronts this shoal water, and (c) the high, heavily forested mountainous terrain behind the fringing swamplands. From barrio Wright to the town of Catbalogan the mountains come down close to the coastline, in places even forming cliffs which overlook Maqueda Bay.

The town of Catbalogan is nestled in a small plain that is surrounded by high, steep hills. It is best described as "a town in a teacup." The level area on which the town is located is not large enough for much expansion. The beach in front of Catbalogan, though not ideal, can be used for landings. At LW LC might ground before reaching the beach, but the bottom is sandy and firm. At HW the beach is narrow with the buildings of the town just back of the beach, leaving no room for the movement of troops or vehicles once landed. Many of the buildings are wood frame stores and small *bodegas*, and have galvanized iron roofs.

North of Catbalogan, the beach fronts barrio Mercedes, which is just across Catbalogan River and stretches along either side of the road. High ground is close







behind Mercedes. The beach along here has fairly deep water (half to one fathom) within about 100-150 feet of the shore, and during the NE monsoon season the water is very quiet.

At Catbalogan is a good concrete wharf that is reported to have about 14ft of water at its end. It was being extended into deeper water before the war. The wharf is 800-900ft long and a number of small vessels can tie up along either side of it, according to their draft, as well as use the "T" on its southern side. Water is piped to the wharf.

#### *Hinterland:*

In spite of the hilly mountainous nature of the inland terrain behind this section of coast, there are numerous small areas of cultivation and *cogon* grasslands. Small plateaux and level areas among the hills have been cultivated, making the area more or less agriculturally independent. Some *abaca* was raised in this area.

Inland from Catbalogan the terrain is quite mountainous and more heavily forested with few areas of cultivation.

#### *Rivers:*

Several large rivers drain into Villareal and Maqueda Bays, and one, the Calbiga, is navigable for boats of 6ft draft for several miles. Like most of the other rivers on Samar, however, the navigable rivers can be entered at HW only by other than small native craft.

All of the rivers in this area have extensive regions of mangrove around their mouths and this extends up the rivers for a matter of miles in some instances.

These rivers are limited in importance from a military standpoint because of the shallow water which prevents entering them at other than HW. The larger rivers in this area are the Pasigay (at barrio Pasigay), the Calbiga, the San Sebastian, the Inabangan, the Magbag and the Catbalogan.

#### *Towns and Barrios:*

Several municipal seats of government are located in this section of coast. These are: VILLAREAL is a small barrio of mostly nipa huts whose inhabitants are primarily fishermen;

CALBIGA is an inland town relying on Calbiga River for its water link with the coast. A short spur road goes from Calbiga SW to the small barrio Tinago on the coast. The inhabitants of Calbiga were mainly fishermen;

HINABANGAN is another inland barrio on Inabangan River also engaged in fishing and some agriculture;

WRIGHT is an important road junction and market place. Fishing and agriculture were the main occupation of its inhabitants;

CATBALOGAN is the provincial capital of Samar and the most important trading center of the island. Concrete and frame buildings and good surfaced streets, as well as the concrete pier, all enhance the value of the town. Inter-island vessels stopped frequently at Catbalogan as well as motor vessels and launches from Cebu and Tacloban. Small boats and launches brought fish and copra from the provincial islands of Samar in the Samar Sea to Catbalogan where they were loaded on to the larger inter-island vessels for shipment to other islands.

#### *Roads:*

Route 1, running in a general N/S direction, connected most of the important towns in this section of coast, excepting Villareal.

From La Paz (vehicle ferry) Route 1 is only one-lane, seasonal road to Calbiga where the older, better surfaced road (Route 1) goes north to Wright and then west to Catbalogan.

At Wright, Route 2 joins Route 1 after crossing the narrowest part of the island from the east coast. From Wright east to about a mile beyond the small barrio Loquilocon, Route 2 is one-lane, all-weather. Beyond this Route 2 is a new road winding through mountainous terrain and is only considered a seasonal road. Landslides can be expected at many of the sidecuts along Route 2.

The section of Route 1 from Wright to Catbalogan has many twists and turns and some rather steep grades and generally follows the coast.

#### **12. Anas Pt—11° 47' N, 124° 52' E—to Jibatan R mouth—12° 04' N, 125° 32' E. (Photos 37, 38, 39).**

This section of coast embraces the bad delta area of the Gandara-Sondara River mouths, the shoal water of Cambatutay Bay, and the wide, generally sandy beach area around Calbayog.

#### *Anchorage:*

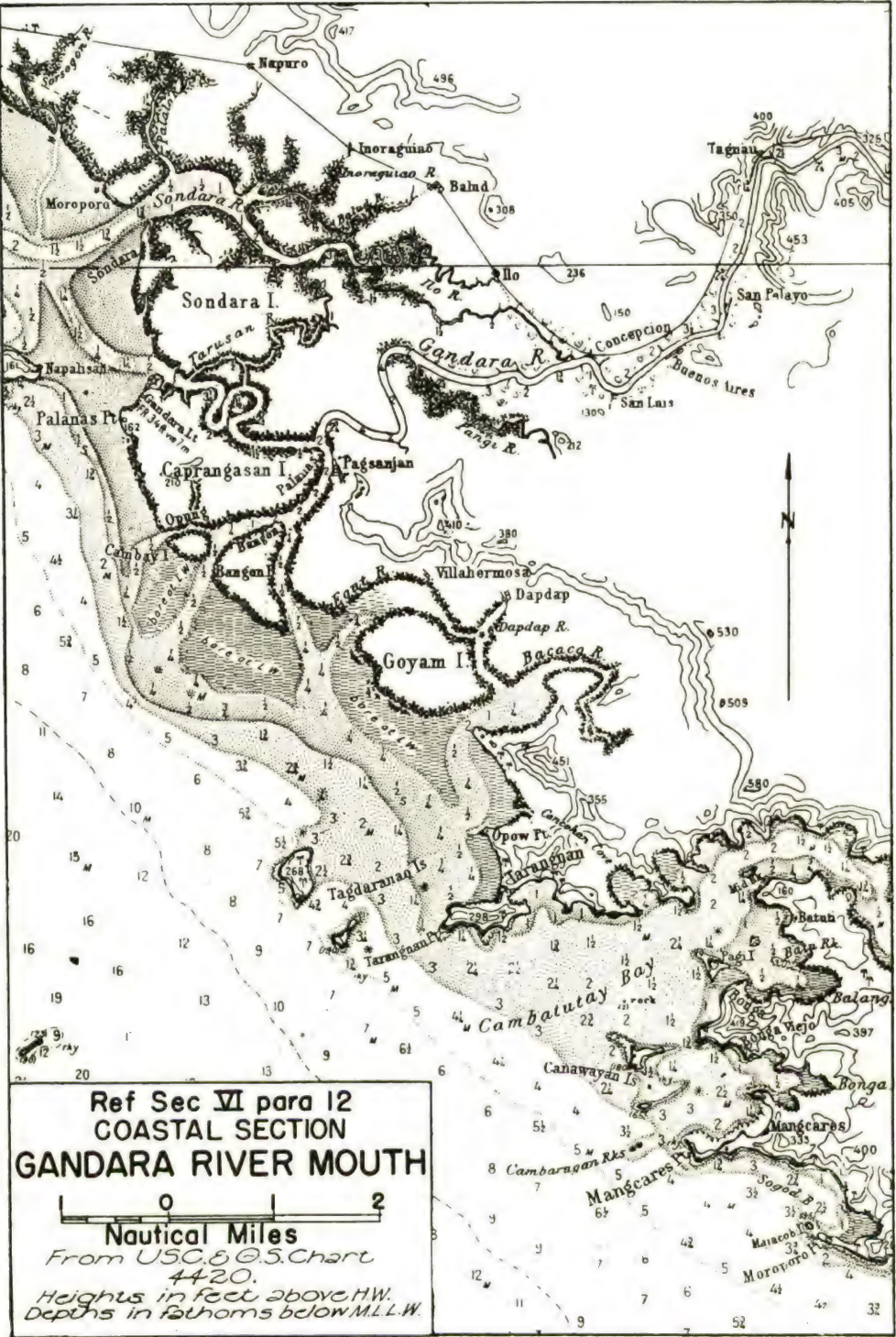
The offshore water depths throughout this section are relatively shallow and increase in depth very gradually. There is no sudden drop-off and, except at Cal-



bayog, large vessels would generally have to keep more than two miles from the irregular coastline.

Vessels of 18-25ft draft can anchor in the small bays of Silanga and Erong, south and north respectively of Buri Island north of Catbalogan.

Cambatutay Bay is filled with shoal water which also extends north of the bay and includes the delta area of the Gandara and Sondara Rivers. There is deep



water off this area between the coastline and the Libucan Islands, but it is so far from the shore that there may be no object in anchoring here.

Anchorage off Calbayog in five to eight fathoms, mud bottom, is available a mile from the shore. During the NE monsoon period this is quiet sheltered anchorage, and is fair during the SW monsoon season during the day until about noon. Work then is stopped until midnight when the winds subside.

*Beaches and Foreshore:*

The only beaches suitable for amphibious operations are those near the town of Calbayog. The better beaches at Calbayog are east of the deep-water channel



for small boats at the west end of the town. West of this channel, the offshore water is very shallow for some distance out. The area generally around Calbayog is level or gently rolling and beach landings for even two miles east of Calbayog can move inland with ease and approach the town from this sector. The road is only a hundred feet or so from the beach and is good along this coast. About a mile east of Calbayog some hills are close to the beach, and the road skirts to the back of these.

The one-fathom line in front of Calbayog is 700yds from the shore at LW but gradually gets closer to the shore until it is about 200yds from the shore, two miles east of Calbayog. Native boats drawing from one to two feet of water used to beach along this coast at LW so the bottom must shallow very gradually until within a short distance of the beach. It then shallows more abruptly to the beach itself.

From the small barrio Carayman to barrio Sta Margarita, the beach conditions outlined above still apply, although the hinterland in this section is somewhat more hilly and harder to traverse. The road (Route 1) from Sta Margarita to Calbayog runs immediately behind the beach for about 95% of the distance and can easily be reached by troops or MT unloaded from LC. At HW there is only a very few feet difference between the water level on the beach and the road level.

This section of beach, coupled with the fact that the terrain behind it is level, is the best beach on the west coast.

The delta area around the mouth of Jibatan River is largely mangrove swamp and unsuitable for beach landings.

#### *Hinterland:*

The hinterland north of Anas Point to Jibatan River is high, mountainous and generally forested. Some level areas and plateaux are cultivated, but aside from the coastal plain on which Calbayog is located there are no extensive level areas.

The gently rolling coastal plain at Calbayog is from 10-15 square miles (statute) and is cultivated in rice and *abaca* and other garden produce. It is on this plain that the Calbayog airfield is built near barrio Trinidad on Jibatan River.

#### *Rivers:*

Several large rivers are in this area. Gandara River, the largest navigable river on the west coast of Samar, has the extensive delta area (previously mentioned) that spoils a large section of coastline.

This river has depths ranging from six feet to 24 feet, between its mouth and barrio Gandara, but has a limiting depth of three feet at its mouth at LW. It is navigable for several miles up each of its forks inland from Gandara.

Sondara River is just north of Gandara River and, though wide at its mouth, is not very long, tying into Gandara River about six miles from its mouth. It has a least depth of three feet and a greatest depth of six feet in the bulbous area inside the mouth of the river.

A common channel is used to enter both the Gandara and Sondara Rivers and this has a limiting depth of about one fathom. Where the Gandara River entrance forks off from this channel, the water is shallower, but the deep part of the channel extends into Sondara River.

Another large river navigable for boats of 6ft draft is the Jibatan. It is navigable for 6ft draft vessels for about three miles, and to Oquendo for boats of 3ft draft. At LW there is only about 18 inches of water over the bar at the mouth.

The river at the head of Cambatutay Bay has a least depth of three feet near barrio Santa Cruz (Balugo), but gets deeper beyond this point. This bay and river is deep enough at all times for the operation of LC.

There are several other lesser rivers in this section of coast on which information is lacking.

#### *Towns and Barrios:*

The principal towns in this area are Gandara, Sta Margarita, Calbayog and Oquendo. Each is a municipal seat of government and located on Route 1.

Calbayog is the largest town in the area with a large stone and concrete church, masonry school buildings, wooden cadre barracks, macadamised streets and a deep-water boat channel leading out through the shallow areas along the coast. Water is from shallow wells and streams.

#### *Roads:*

Route 1 is the only road in this section. It is reported to be a good gravel-surfaced road both east and west of Calbayog. The road east of Calbayog along the beach area is serviceable for a width of 12 feet and is reported to be a good road. This condition is said to exist from Oquendo to Calbiga. North of Oquendo the road is newer and is not in as good condition, and is considered only one-lane seasonal.

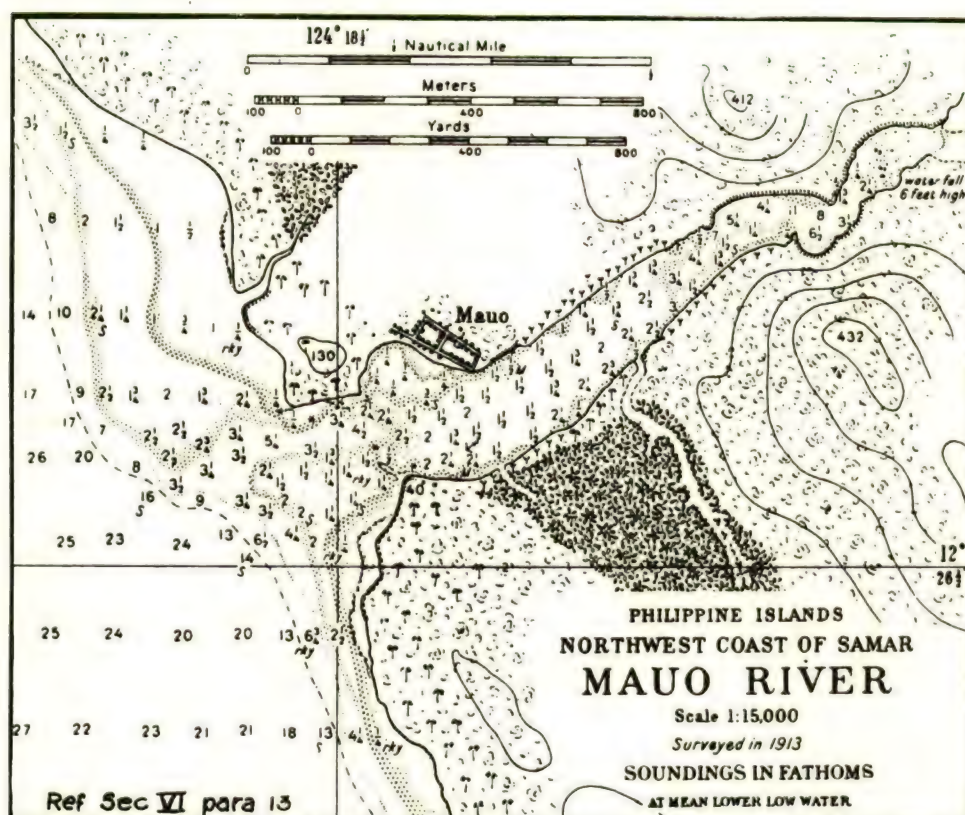


**13. Jibatan River mouth—12° 04' N, 125° 32' E—to Balicuatro Point—  
12° 35' N, 124° 17' E.**

The coast throughout this section is steep-to and reef-free with no offshore dangers and no landing beaches. Large vessels can safely navigate this whole coastal area at a distance of half a mile from the shore. The hinterland is some of the highest, most heavily forested on Samar and the only road touching this section of coast is Route 1, which, after coming over to Allen on the north from Catarman, runs south to the small barrio Mauo. This is a new section of one-lane seasonal road and is undoubtedly unsuitable for much MT traffic.

*Anchorage:*

Anchorage protected from the NE monsoon are available anywhere along this coast up to half a mile from the shore. Anchorage between Dalupiri Island and Samar, in the Dalupiri Pass, is subject to strong tidal currents and is not considered a good anchorage area. The short, but deep, Mauo River has good anchorage for vessels from 9-12ft draft for about three-quarters of a mile from its mouth. There is also fresh water at a 6ft waterfall one mile from its mouth.



During the SW monsoon season there is no place off this coast where vessels can stand in sheltered anchorage.

*Beaches and Foreshore:*

Except for a long narrow coastal plain around and south of Mauo, this coast is without level coastal areas. In fact, there are many cliffs that face the sea with deep water at their bases.

The only beach in this section of coast that has any significance is the beach area at barrio Tinambacan across Jibatan River from the Calbayog area. There is no information available concerning this beach other than shown on the USC & GS chart 4420. The one-fathom line is about 300 yards from the beach. The best sections of this beach are NW of the town to Botu Point. The beach is about three-quarters of a mile long. Directly in front of the town the water is very shallow and landings would not be possible at LW on the beach.

There may be other small beaches in this coastal section of which information is lacking, but the general character of the hinterland would make movement inland very difficult.

The foreshore from Jibatan River to Balicuatro Point consists of only small isolated coastal plains dotted between long sections of high mountainous terrain that comes right down to the shore line. The longest of these narrow plains is the five-mile stretch south of barrio Mauo to the small Looc Bay, which is only half a mile wide at its widest point.



# LEGEND

LLW  
Lower Low Water  
LW  
Low Water  
HW  
High Water

# LANDING BEACH SUMMARY with Terrain Study 88

This Summary covers beaches considered tactically important. For full description of coastline see Section VI.

## INFORMATION COMMON TO ALL BEACHES

All depths given at mean LLW.

Beach Information mostly from USC and GS, some informants and photo coverage (pre-war). Tide range is measured from Higher High Water Height to lowest tide.

BEACH ORIENTATION Map and Photo Ref	BEACH No. 1 Ref. Sec. VI, para 2 Map 3. Photos 1, 2	BEACH No. 2 Ref. Sec. VI, para 4 Map 3	BEACH No. 3 Ref. Sec. VI, para 6 Map 3. Photo 4	BEACH No. 4 Ref. Sec. VI, para 6 Map 3	BEACH No. 5 Ref. Sec. VI, para 9 Map 3. Photo 16	BEACH No. 6 Ref. Sec. VI, para 11 Map 3. Photos 31-34	BEACH No. 7 Ref. Sec. VI, para 12 Map 3. Photos 38, 39
OBJECTIVE .. ..	Airfield, town, road, A/F site.	Airfield site.	Airfield, town, road, A/F site.	A/F site.	Town, A/F site.	Provincial capital, road.	A/F site, town, road.
APPROACH FROM SEA ..	Direct thru San Bernardino Strait from Pacific Ocean.	Direct from Pacific Ocean.	Direct from Pacific Ocean.	Direct from Pacific Ocean.	Direct from Pacific Ocean thru Leyte Gulf.	From Samar Sea.	From Samar Sea.
DEPTHS OFFSHORE (At mean LLW)	1 fm line about 100 yds. from shore.	1 fm line about 100 yds. from shore, except at river mouth.	1 fm line, 200-300 yds. from shore at head of bay.	1 fm line about 200 yds. from shore.	1 fm line about 200 yds from shore.	1 fm line about 200 yds. from shore.	1 fm line averages 400 yds from shore.
DIMENSIONS : Length .. ..	4 1/2 mls.	5 mls.	2 mls.	3 mls.	1 ml.	1/4 ml.	4 mls.
Width LW .. ..	Good beach at either tide.	Good wide beach at either tide.	Wide beach at either tide.	Wide beach at either tide.	Good beach at either tide.	Narrow beach at high tide.	Narrow beach at high tide.
Width HW .. ..	Gradual.	Gradual.	Gradual.	Unknown.	Unknown.	Unknown.	Unknown.
SLOPE at LW line HW line .. ..	Bad in NE monsoon. No surf during SW monsoon.	Bad in NE monsoon. No surf in SW monsoon.	Bad in NE monsoon. No surf in SW monsoon.	Bad in NE monsoon. No surf in SW monsoon.	Fair in SW monsoon. No surf in NE monsoon.	Bad in SW monsoon. No surf in NE monsoon.	Bad in SW monsoon. No surf in NE monsoon.
SURF CONDITIONS ..	Debris on beach after NE monsoons.	Debris on beach after NE monsoons. Some coastal coral.	Beach usually clear.	Some debris on beach after NE storms. Some coastal coral.	Beach usually clear.	Beach usually clear.	Beach usually clear. May be debris after SW storms.
BEACH OBSTRUCTIONS for Landing Craft	Sandy—Suitable for M/T.	Sandy—Suitable for MT.	Firm sand—Suitable for MT.	Sand—Suitable for MT.	Sand—Suitable for MT.	Sand—Suitable for MT.	Sand—Suitable for MT.
CHARACTER OF BEACH SOIL : Suitability for MT	Road 1/2 ml. thru sandy coconut and scrub growth behind beach.	Road directly behind beach—easy access.	Thru coconut trees to road a few hundred yds. from beach.	Road just behind beach—Easy access.	Thru two passes, one at either end of beach.	Road along beach area.	Road within few hundred feet of beach.
ACCESS TO ROAD SYSTEM .. ..	Sandy coastal plain about 1 ml. deep. Low rice lands behind plain.	Narrow, sandy coastal plain. Rice lands leading to Mts behind.	Sandy coconut plain 1 1/2 mls. wide. Mts behind.	Sandy coconut plain 1 ml. wide. Mts behind.	Large rolling rice and coconut plain. Mts behind.	Town on small coastal plain. Mts surround town.	Large, rolling coastal plain of rice, abaca and coconuts.
HINTERLAND : Type of soil, terrain and vegetation, with relation to movement, dispersal and concealment	See USC & GS Chart 4420. Cataman R.—Can be used for LC dispersal.	See USC & GS Chart 4422. Dolores and Ulut R.—Suitable for LC dispersal.	See USC & GS Chart 4422. Protected anchorage to lee of Andis I.	See USC & GS Chart 4422. Soribao R., suitable for L/C dispersal.	See USC & GS Chart 4423. San Pedro Bay full of shoals and reefs.	See USC & GS Chart 4420. Bldgs of town close to beach.	See USC & GS Chart 4420. Hills close to beach between Carayman and Sta Margarita.
MISC. INFORMATION ..	Good seasonal landing beach. Look for Church roof and Cataman R. mouth.	Good seasonal landing beach. S. end of 8 ml. long reef area good land mark.	Good seasonal landing beach. Bad coral reef splits beach into two sections.	Fair landing beach. Coral along shore. Lighthouse on Divinubo I. Good landmark.	Fair landing beach. Low hills behind beach restrict inland movement.	Good landing beach. Lighthouse on Jesus Pt, N of town.	Good seasonal landing beach. Deep water boat channel at Calbayog.
LANDING SUITABILITY and REMARKS ..							



# BEACH SUMMARY

## rain Study 88

very important. For full description of coastline see Section VI.

### INFORMATION COMMON TO ALL BEACHES

All depths given at mean LLW.

Beach Information mostly from USC and GS, some informants and photo coverage (pre-war).

Tide range is measured from Higher High Water Height to lowest tide.

	BEACH No. 4 Ref. Sec. VI, para 6 Map 3	BEACH No. 5 Ref. Sec. VI, para 9 Map 3. Photo 16	BEACH No. 6 Ref. Sec. VI, para 11 Map 3. Photos 31-34	BEACH No. 7 Ref. Sec. VI, para 12 Map 3. Photos 38, 39
A/F	A/F site.	Town, A/F site.	Provincial capital, road.	A/F site, town, road.
ean.	Direct from Pacific Ocean.	Direct from Pacific Ocean thru Leyte Gulf.	From Samar Sea.	From Samar Sea.
from	1 fm line about 200 yds. from shore.	1 fm line about 200 yds from shore.	1 fm line about 200 yds. from shore.	1 fm line averages 400 yds from shore.
	3 mls.	1 ml.	$\frac{1}{4}$ ml.	4 mls.
de.	Wide beach at either tide.	Good beach at either tide.	Narrow beach at high tide.	Narrow beach at high tide.
	Unknown.	Unknown.	Unknown.	Unknown.



monsoon	Bad in NE monsoon. No surf in SW monsoon.	Fair in SW monsoon. No surf in NE monsoon.	Bad in SW monsoon. No surf in NE monsoon.	Bad in SW monsoon. No surf in NE monsoon.
	Some debris on beach after NE storms. Some coastal coral.	Beach usually clear.	Beach usually clear.	Beach usually clear. May be debris after SW storms.
r MT.	Sand—Suitable for MT.	Sand—Suitable for MT.	Sand—Suitable for MT.	Sand—Suitable for MT.
road from	Road just behind beach— Easy access.	Thru two passes, one at either end of beach.	Road along beach area.	Road within few hundred feet of beach.
mls.	Sandy coconut plain 1 ml. wide. Mts behind.	Large rolling rice and coconut plain. Mts behind.	Town on small coastal plain. Mts surround town.	Large, rolling coastal plain of rice, <i>abaca</i> and coconuts.
4422. o lee	See USC & GS Chart 4422. Soribao R., suitable for L/C dispersal.	See USC & GS Chart 4423. San Pedro Bay full of shoals and reefs.	See USC & GS Chart 4420. Bldgs of town close to beach.	See USC & GS Chart 4420. Hills close to beach between Carayman and Sta Margarita.
each. beach	Fair landing beach. Coral along shore. Lighthouse on Divinubo I. Good landmark.	Fair landing beach. Low hills behind beach restrict inland movement.	Good landing beach. Lighthouse on Jesus Pt, N of town.	Good seasonal landing beach. Deep water boat channel at Calbayog.



# LANDING BEACHES with Terms

This Summary covers beaches considered tactically

LEGEND	
LLW	Lower Low Water
LW	Low Water
HW	High Water

BEACH ORIENTATION Map and Photo Ref	BEACH No. 1 Ref. Sec. VI, para 2 Map 3. Photos 1, 2	BEACH No. 2 Ref. Sec. VI, para 4 Map 3	BEACH No. 3 Ref. Sec. VI, para 6 Map 3. Photo 4
OBJECTIVE .. ..	Airfield, town, road, A/F site.	Airfield site.	Airfield, town, road, site.
APPROACH FROM SEA ..	Direct thru San Bernardino Strait from Pacific Ocean.	Direct from Pacific Ocean.	Direct from Pacific Ocean.
DEPTHS OFFSHORE (At mean LLW)	1 fm line about 100 yds. from shore.	1 fm line about 100 yds. from shore, except at river mouths.	1 fm line, 200-300 yds. shore at head of bay.
DIMENSIONS: Length .. ..	4½ mls.	5 mls.	2 mls.
Width LW .. ..	Good beach at either tide.	Good wide beach at either tide.	Wide beach at either tide.
Width HW .. ..	Gradual.	Gradual.	Gradual.
SLOPE at LW line .. .. at HW line .. ..	Gradual.	Gradual.	Gradual.



<b>SURF CONDITIONS</b> ..	Bad in NE monsoon. No surf during SW monsoon.	Bad in NE monsoon. No surf in SW monsoon.	Bad in NE monsoon. No surf in SW monsoon.
<b>BEACH OBSTRUCTIONS</b> for Landing Craft	Debris on beach after NE monsoons.	Debris on beach after NE monsoons. Some coastal coral.	Beach usually clear.
<b>CHARACTER OF BEACH</b> SOIL: Suitability for MT	Sandy—Suitable for M/T.	Sandy—Suitable for MT.	Firm sand—Suitable for ..
<b>ACCESS TO ROAD</b> SYSTEM .. ..	Road $\frac{1}{2}$ ml. thru sandy coconut and scrub growth behind beach.	Road directly behind beach—easy access.	Thru coconut trees to a few hundred yds. beach.
<b>HINTERLAND:</b> Type of soil, terrain and vegetation, with relation to movement, dispersal and concealment	Sandy coastal plain about 1 ml. deep. Low rice lands behind plain.	Narrow, sandy coastal plain. Rice lands leading to Mts behind.	Sandy coconut plain 1 $\frac{1}{2}$ wide. Mts behind.
<b>MISC. INFORMATION</b> ..	See USC & GS Chart 4220. Catarman R.—Can be used for LC dispersal.	See USC & GS Chart 4422. Dolores and Ulut R.—Suitable for LC dispersal.	See USC & GS Chart .. Protected anchorage to of Andis I.
<b>LANDING SUITABILITY</b> and REMARKS ..	Good seasonal landing beach. Look for Church roof and Catarman R. mouth.	Good seasonal landing beach. S. end of 8 ml. long reef area good land mark.	Good seasonal landing beach. Bad coral reef splits into two sections.





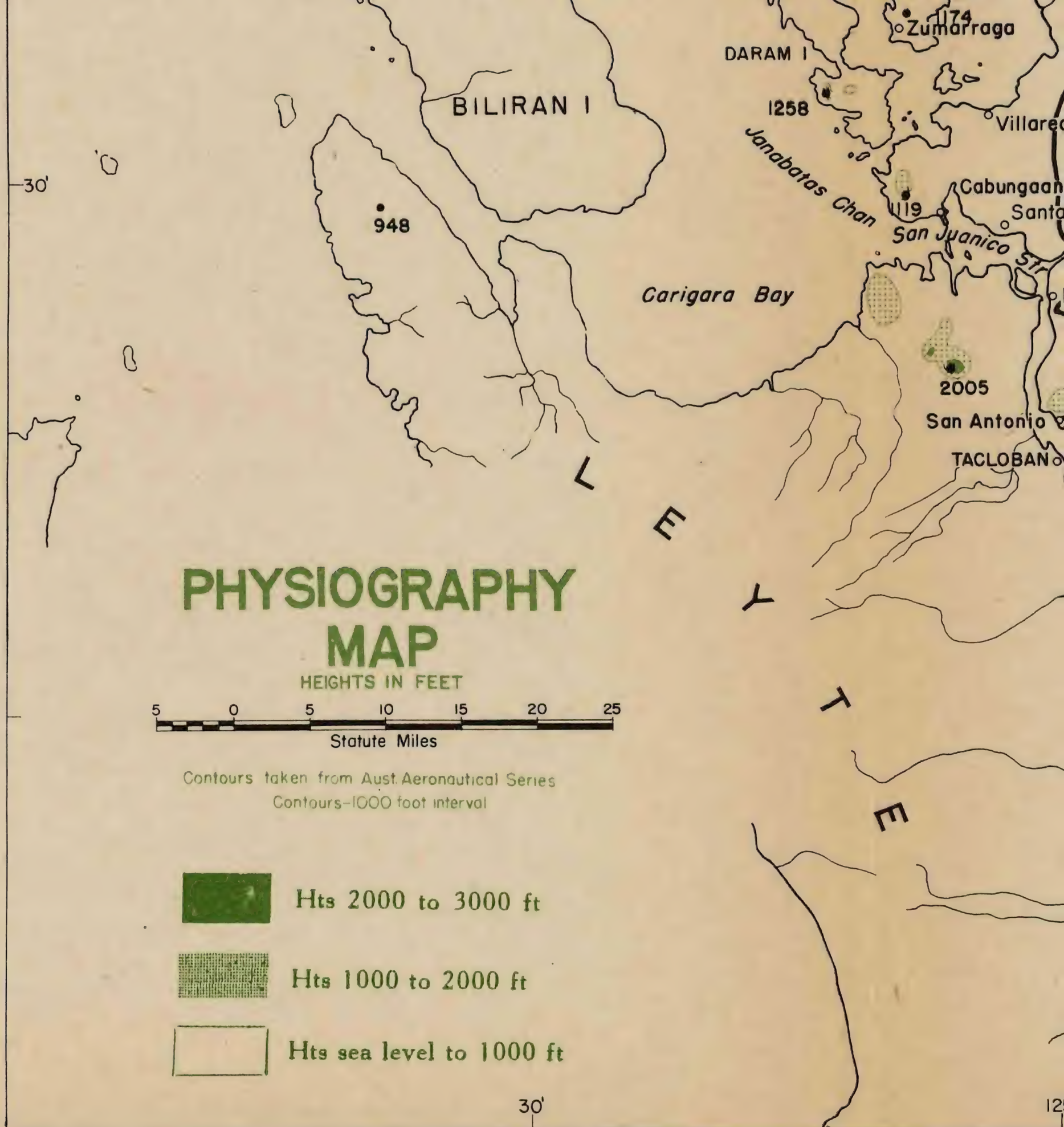


















#### *Hinterland:*

Hinterland throughout this section has some of the highest, most heavily forested terrain on the island.

The impression gained from sailing along this coast is one of heavily forested mountains of uniform height rising steeply behind the shore.

#### *Rivers:*

Two prominent rivers drain into Mauo River about two miles from its mouth. One of these is unnamed; the other is the Bunglasan. The point where they join is six feet higher than the lower Mauo River and a small waterfall results about a mile downstream. Ships' captains are reported to stop occasionally in the mouth of the deep Mauo River and fill their fresh water tanks from this waterfall. Vessels of 9-12ft draft can proceed up the Mauo to within a few hundred yards of the fall to obtain the water. This is the largest river in this area and the only river on which information is available.

#### *Towns and Barrios:*

Tinambacan and Allen are the two most important barrios in this area. Each is a municipal seat of government.

Although Mauo, near Allen, had a small area of protected anchorage, vessels anchored off the coast at Allen rather than use the small restricted Mauo River for anchorage.

#### *Roads:*

The only section of road in this area is the short stretch of one-lane seasonal road from Allen to Mauo. This road follows the very narrow coastal plain along the beach. It is fairly new.

□   □   □

## SECTION VII—PHYSIOGRAPHY

(See Map 7)

### 1. General:

Samar Island has no pronounced mountain ranges or specific drainage pattern. It is covered from coast to coast with low, frequently rugged and steep mountains that reach their highest peaks centrally on a curved line that runs predominantly N/S from the NW coast of the island bordering the Samar Sea, to the south coast at Lauaan Bay. The highest charted peak on the island is only 2789 feet, but the average height of the island is well above sea level and there are very few lowlands and swamp areas.

### 2. North Coast:

One of the most extensive low areas trends generally E/W along the north coast. The coastal plain varies in width from a few hundred yards to several miles and even beyond this, the hills are generally less than 1000 feet high. The main hindrance to movement over this terrain is the heavily forested areas and the winding courses of the small rivers and their tributaries.

The road south from Catarman follows the Catarman River valley, one of the principal valleys going inland from the north coast. Another inland pass is the Catubig River valley, which although narrow and sheer in places, is traversable in as far as Catubig.

Vegetation along the north coast consists of coconut trees and scrub along the shore, rice and cultivated lands and more scattered coconuts back from the shore and secondary and primary forest areas on the hills and mountains inland. Traversability and general utilization of the land will be limited mainly to the beach area and the area between the beach and the road in initial phases, but further development of the area can make use of the now forested rolling hills inland.

### 3. East Coast:

Cape Espiritu Santo, north of Gamay Bay, is a moderately high, bold-faced, rocky section of coast with little or no beach area. The mountains in this sector are high along the coast, dropping off to a high, *cogon* and scrub plateau that is frequently cut with ravines.

Under 1000 feet high, but rugged and steep-to, the mountains along this coast extend southward as far as Port Libas where greater heights are encountered for the rest of the distance south along the east coast.

From Oras Bay south to Matarinao Bay is the only area where there is a coastal plain of any significance. This plain may be as wide as two miles in places and narrow down to a few yards in others.

The coastal plain for the most part is sandy soil, but there are also areas of clay-loam, particularly in river valleys or plains between river mouths where rice is



grown. Around Matarinao Bay is found a red lateritic soil, and it is from this area that the Samar Iron Mining Co shipped tons of iron ore to Japan.

South of Matarinao Bay, on the peninsula that forms the SE tip of Samar, is the prominent coral ridge 400 feet high, 300-650 yards wide, that trends SE for about 27 miles.

#### 4. South Coast:

With the exception of the large, rolling Basey plain, the south coast is high and rugged down close to the shore. Particularly along the east shore of San Pedro Bay do the mountains form a good natural barrier to inland movement.

Most of the higher peaks are between 1000 and 2000 feet and the mountains are particularly heavily forested.

The Basey plain is not level, and the hills are not high but do have occasional steep faces. Near the southern entrance to San Juanico Strait is some high ground capped by the 1177ft Mt Danglay.

Along the Samar coast of San Juanico Strait is a low, level coastal area bordered by mangrove swamp. Heights of over 1000 feet do not occur until about 5-6 miles inland, but the vegetation is heavy and movement difficult.

#### 5. West Coast:

The northern section of the west coast is marked by steep cliffs along the coast as far south as Jibatan River, and average heights only two or three miles inland are between 1000 feet and 2000 feet.

From Calbayog to Catbalogan, there are some relatively wide, low coastal areas frequently broken by steep hills less than 1000 feet high that may come right down to the coast. Immediately behind Catbalogan the hills rise steeply and lead into peaks over 1000 feet high two to three miles inland. It is over some of this high terrain that the road (Route 1) traverses.

The path of the road east from Wright to the east coast of the island is over some very rugged mountainous terrain although it generally follows a low belt that bisects higher mountains north and south of it.

The road north from Calbayog to Catarman also makes use of a valley formed by Catarman River which divides the high mountainous country along the west coast north of Jibatan River from the high central ranges of the island.

□      □      □

### SECTION VIII—VEGETATION

(See Map 8)

#### 1. General:

The greater part of Samar's vegetation is forest, for the most part typical of that found on the islands of the Philippines.

Back of the cultivated coastal strip, where most settlement occurs, the terrain ascends into *cogon*, scrub, and forested hills which are traced with numerous ravines. Toward the interior these hills merge into heavily timbered and jungle-covered mountains.

Following is a general classification of the vegetation met with on the island.

##### a. Sandy beach vegetation:

Two types of tree which indicate a firm sand beach are the casuarina and the coconut.

Casuarina trees look like pines but have a somewhat more delicate grace to them than the ordinary pines. They are easily identified from a distance and will seldom have undergrowth. Their wood is hard and heavy—is excellent firewood and well suited for bridge and other heavy construction. They offer good concealment from the air and are usually spaced far enough apart to allow vehicle movement beneath them.

Coconut trees are generally cultivated and planted in uniform rows about 25-30 feet apart and about the same distance between trees. When fully grown they also provide excellent concealment from the air. Like the casuarina they require a well drained sandy soil and also will seldom have undergrowth. A large portion coastal perimeter of Samar is planted with coconuts, and copra was one of the island's primary products.

Beware of inviting-looking sandy beaches that do not have some type of substantial growth either on them or behind them. Particularly around the mouth of a river, the delta formed by flood waters during monsoon seasons produces a scrubby, tangled mass of vegetation that is difficult to penetrate.

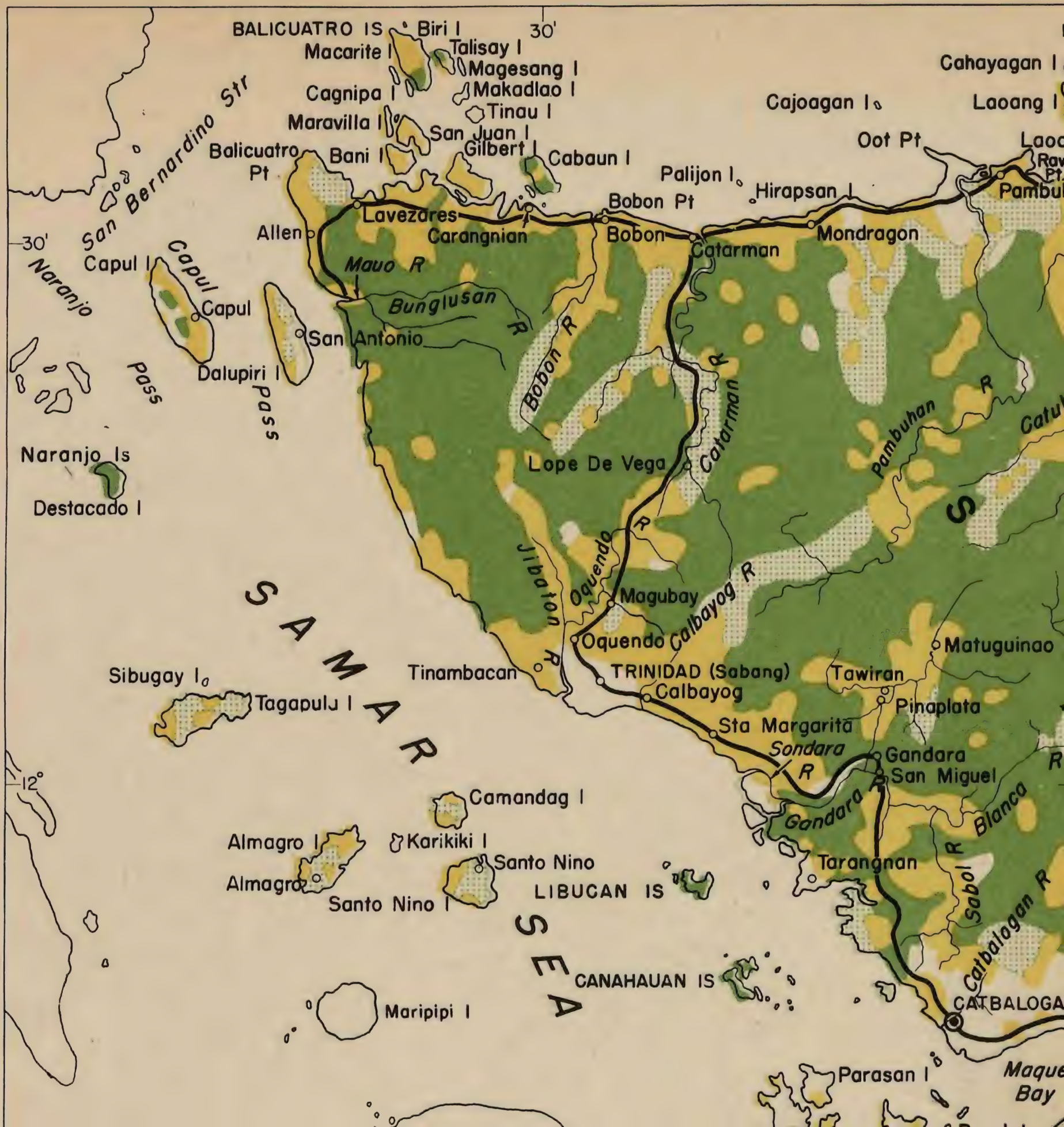
##### b. Mangrove:

Mangrove is a salt-water tree. It grows best in a brackish water and only in a muddy or inundated soil. Frequently mangrove may be growing in water three or







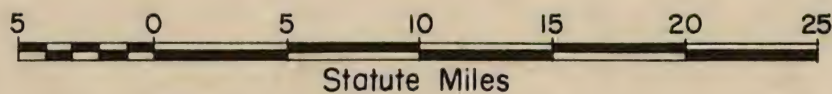








# VEGETATION MAP



## =LEGEND=

Rain or Primary Forest



Secondary Forest



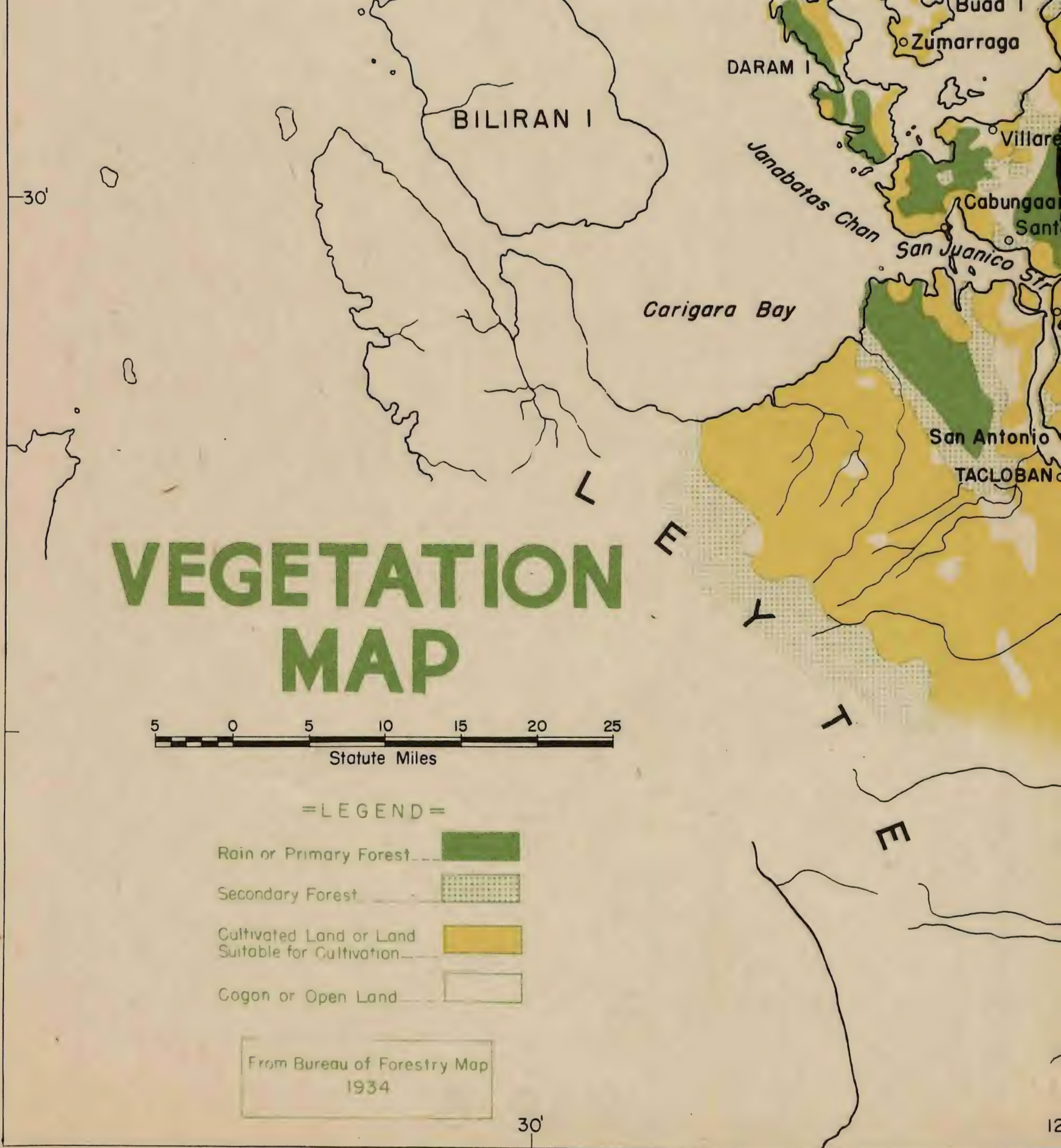
Cultivated Land or Land  
Suitable for Cultivation



Cogon or Open Land



From Bureau of Forestry Map  
1934









four feet deep. Mangrove is most difficult to penetrate and is often frequented by crocodiles and poisonous snakes. Large mangrove trees furnish excellent firewood and are suitable for heavy construction or temporary piling.

Mangrove swamps often include nipa palms, and frequently a heavy fringe of mangrove may be backed by nipa palm where the water is slightly less saline. However, this is not a rule since nipa palm may adapt itself to a greater range of salinity than any other plant in the mangrove swamp. Nipa palms form a dense growth difficult to penetrate on foot and the water is commonly too shallow for boats except along channels.

*c. Cultivated Land:*

There is little or no cultivated land in the interior. On a narrow belt along most of the coastline, however, copra and hemp are cultivated and exported. Rice and corn are grown only in sufficient quantities to provide food for the inhabitants. Small areas are also planted with camotes, cane, tobacco and a variety of vegetables. Almost any crop that can be grown in other parts of the Philippines grows well in Samar.

*d. Grasslands:*

The commonest grass in the Philippines is *cogon*. Samar has no extensive grasslands. There are a few scattered patches along the west coast. Such grasslands as do exist are principally of *cogon* and *tigbao* grass.

*Cogon* grass is not good forage. Even the tender young shoots are harmful to most grazing animals.

*Tigbao* frequently grows to 8-10 feet high and is not suitable at all as forage. It is a relative of the sugarcane but has no commercial use.

If *tigbao* and *cogon* are continuously cut back they may gradually be replaced by finer grasses suitable for forage.

*e. Secondary forest:*

This is the growth which springs up after a forest is destroyed or used up. Frequently it is of softer types of timber that are relatively shortlived.

Young secondary forest may be hard to penetrate by foot troops because of dense low growth. Trees are generally much smaller than in primary forests—rarely over 50 feet and commonly under 30 feet.

There is very little secondary growth on Samar.

The natives in cultivating their gardens and smaller areas under crop, follow the easiest line, and rather than attempt to keep down the growth of scrub and natural growth, which if not checked is prolific, they abandon the area and clear and cultivate a new piece of land. The abandoned area soon becomes secondary forest.

*f. Primary forest:*

In Samar, the species of good timber trees found in this type of forest consist chiefly of ipil, molave, mancano, apitong, narra (both red and yellow), yacal, guiyo, and lauan.

The lumber company in Calbayog hauled guiyo, lauan, molave and narra logs to their mill from mountains about 12 miles away where sufficient lumber was milled for local purposes only.

A primary forest is easily recognised by its heavy canopy of foliage often 100 feet or more above ground, supported by the large, frequently buttressed, trunks of the trees. The tallest, and usually the best timber, form this top layer. Density of the undergrowth depends on the amount of sunlight that can filter through the foliage of heavier trees.

Primary rain forest occurs on flat, hilly or mountainous terrain from sea level up to several thousand feet.

Listed under Section XVI (Resources) are the sawmills on the island.

*g. Moss forest:*

There is no record of any extensive moss forest on Samar. This occurs where a rain forest grows high enough on a mountain for the trees to be constantly in the moisture of low clouds, or where heavy mists or fogs hang over a forest for prolonged periods. A mossy mantle forms that is frequently dripping.

Travel through moss forests presents much difficulty because of the cold and damp.

*h. Freshwater swamps:*

Freshwater swamps are not found to any extent on Samar. Areas along either side of some of the larger rivers are known to be swampy and difficult to pass, but generally they are of little military consequence.

## 2. Plantations:

Plantations of various sizes are scattered mainly around the coast where there is ready access to coastal and inter-island steamers. The largest were at Borongan, Basey, along the north coast and around Guiuan and Balangiga on the south coast. Principal produce was copra and *abaca*, with some rice.



### 3. Cultivated Land:

A relatively small percentage of Samar is under cultivation. One of the principal drawbacks to agricultural development is the damage done to crops by typhoons and the strong NE winds and rain.

The soil of Samar generally is well suited for cultivation, but the larger part of the island is so heavily forested that cultivation has been limited to the lower, level areas.

Generally the natives have kept to the more level coastal areas where there is access to water routes. Exceptions are along Catubig River to the town of Catubig, and along other rivers which are navigable for native boats.

□   □   □

## SECTIONS IX AND X—RIVERS, LAKES AND SWAMPS

(See Map 9)

### 1. General:

Samar is well watered by numerous rivers and streams, but with a few exceptions they are not navigable for any great distance inland due to shallowness and to sand bars at their mouths.

There are no lakes, nor are there any extensive areas of swamp land throughout the island. The principal swamp areas are found along the lower course of Catubig River, the delta of Gandara River, and much of the shoreline of, and near, Carangian Channel on the north coast. Most of the river mouths and coves along the shore have fringes of mangrove or nipa swamp, but they do not cover extensive areas.

### 2. Rivers:

The water courses emptying into the Pacific on the east and north coasts of Samar are generally larger and longer than those flowing into the Samar Sea and Leyte Gulf on the west and south coasts. Due to the hilly terrain farther inland, numberless tributaries wind around the gullies and flow into the larger rivers, giving the island a very intricate drainage pattern.

In travel along the coast road many of the river mouths are a handicap to travel, as they have to be ferried.

The following is available river data:—

#### i. CATARMAN RIVER. (Photos 1, 2):

North coast of Samar: Empties into the sea near Catarman. The channel across the bar is very narrow and at LW has a depth of  $1\frac{1}{2}$  ft, with 6-8 ft inside. At HW boats drawing  $6\frac{1}{2}$  ft may cross the bar, which is more than 60 yards wide. The channel of the river is changeable and has a silt and sand bottom. The river is navigable at HW for boats of  $6\frac{1}{2}$  ft draft for nine miles and for *bancas* for 18 miles.

#### ii. PAMBUHAN RIVER:

North coast of Samar: Enters into the sea near Pambuhan, about two miles SW of Livas Point. This river is navigable in its upper course for dugouts.

#### iii. CATUBIG RIVER:

North coast of Samar: At its mouth the Catubig branches into two channels, the main branch discharges into Laoang Bay, widening near the mouth to form Laoang Harbor. The eastern branch, known as Palapag Channel empties into Port Palapag.

It is navigable for small steamers and launches drawing up to 10 ft to Catubig, 10 miles inland. There is a considerable quantity of mangrove and nipa swamp at its mouth, and along the east bank for miles along its lower course. The channel at the mouth of the river is probably navigable only during HW. Above Catubig, the river may be navigable for small boats as far as Las Navas.

#### iv. ORAS RIVER:

East coast of Samar: Empties into the NE end of Oras Bay. Boats drawing five feet may cross the bar at HW. The bar is about 200 yards wide and the channel across the bar was marked with buoys. Small launches drawing three feet can navigate for about 13 miles and *bancas* are reported to be able to reach almost to its upper limits.

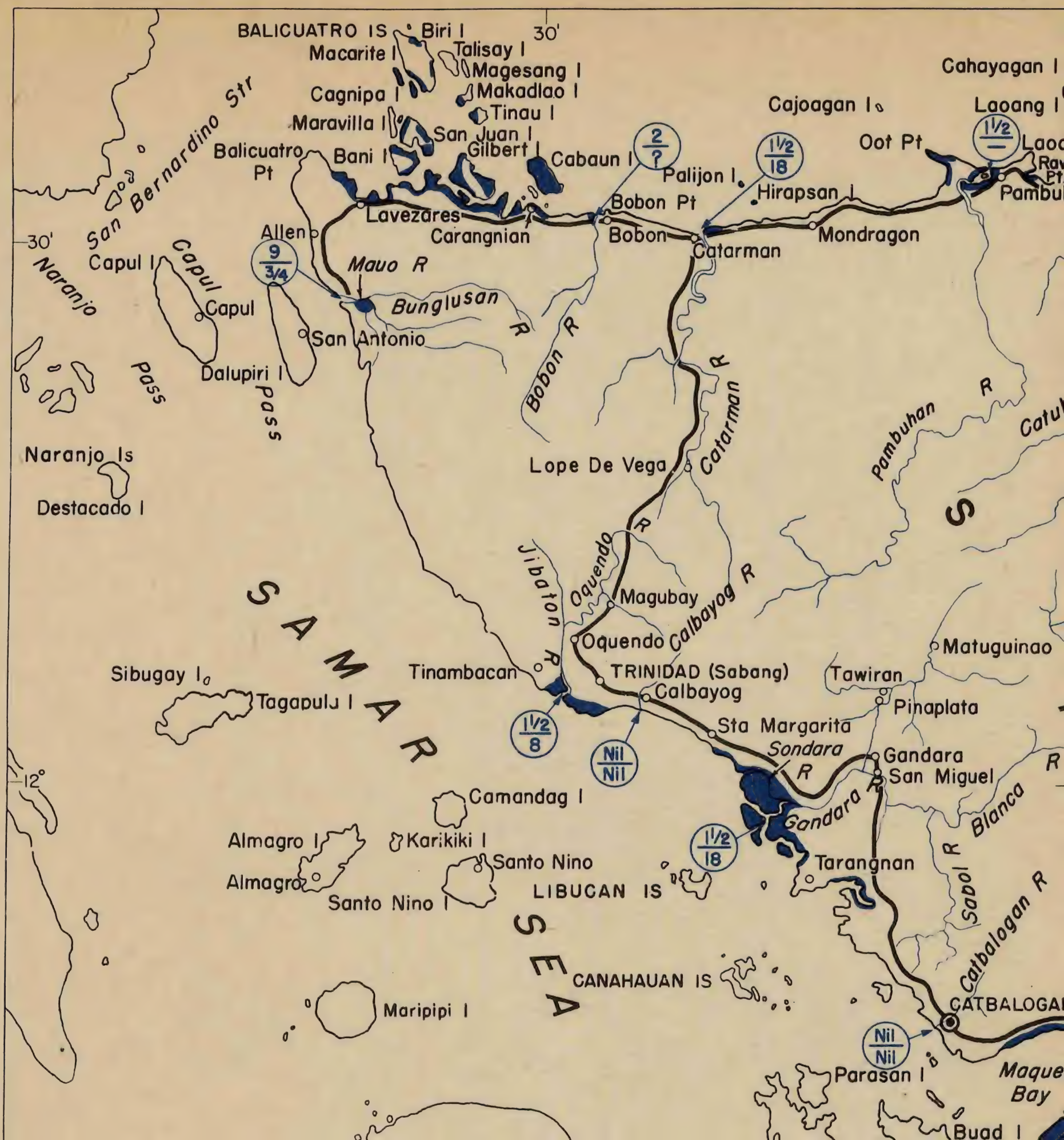
#### v. DOLORES RIVER:

East coast of Samar: Flows into the Pacific Ocean south of Dolores, about  $2\frac{1}{2}$  miles SW of Cabra Point. It has about two feet of water on its bar at LW. A 7 ft channel, marked by stakes, crosses the bar. It is navigable for launches drawing six feet for about 32 miles, and for *bancas* about 40 miles. The bar is over 300 yards wide. The channel of the river is stable and the bed is composed of sand and silt.







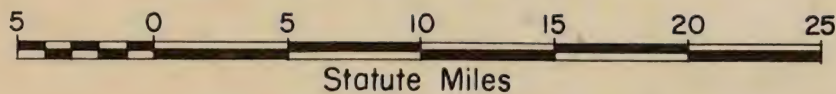








# RIVERS, LAKES & SWAMPS



## LEGEND

Swamp Area



$\left(\frac{2}{10}\right)$  Denotes: 2 feet at bar at low water  
10 mile navigability for bancas

30'

125







vi. ULUT RIVER:

East coast of Samar: Enters the Pacific five miles SW of Dolores. It has 1½ft of water on its bar at LW with depths of three to six feet inside. Navigable for boats of 6ft draft for a considerable distance inland.

vii. TUBIG RIVER:

East coast of Samar: Enters the sea just north of Taft. There is a 6ft depth over its bar at LW with deeper water inside. Its mouth is about 150 yards wide. Navigable for light draft launches for five miles and for native *bancas* 15 or 20 miles. Boats had to be lowered over rapids at the head of navigation. The banks at its mouth are rough and jagged and closely bordered by trees.

viii. BORONGAN RIVER. (Photo 4):

East coast of Samar: Boats of 3ft draft can navigate a distance of about six miles up the river and *bancas* about eight miles. The bar is about 60 yards wide and has 1½ft of water over it at LW.

ix. SORIBAO RIVER:

East coast of Samar: Empties into the sea about three miles south of Borongan. Has about two feet of water on its bar at LW, with deeper water inside. It is about 250 yards wide just inside its mouth. Boats drawing 6½ft may cross the bar at HW, provided there is a smooth sea, and ascend the river about three miles. *Bancas* may ascend about 10 miles. The bar is about 60 feet wide, and the channel across it is stable. The bottom is sand and silt.

x. BALANGIGA RIVER:

South coast of Samar: Flows into Leyte Gulf at Balangiga. There is three feet of water over the bar at LW.

xi. BASEY RIVER. (Photos 15, 16):

South coast of Samar: This is one of the largest streams entering San Pedro Bay, and is probably navigable for some distance inland. At LW there is 1½ft of water over the bar.

xii. CALBIGA RIVER. (Photo 24):

West coast of Samar: Empties into Samar Sea a few miles north of Calbiga. Has fairly steep banks, is deep and has a strong current. There is a ferry crossing at its mouth. At LW 1½ft of water covers the bar with deeper water inside. Navigable for several miles for boats of 6ft draft.

xiii. CATBALOGAN RIVER. (Photos 31-35):

West coast of Samar: Empties into Samar Sea at Catbalogan. Only a small stream but owes its importance to the fact that cargo from steamers was transhipped by launches and small boats to the Chinese docks on its banks. The bar at its mouth is almost bare at LW. Inside there are depths of 7-8 feet navigable for three miles by small boats only. At its mouth there is good shelter for launches.

xiv. GANDARA RIVER:

West coast of Samar: This is the largest and most important river on the west coast. It empties into Samar Sea about nine miles SE of Calbayog.

It is navigable at HW for launches under 90ft length and 6ft draft as far as the fork just above Gandara. Launches of 2ft draft can ascend as far as Pinaplata, and possibly Tawiran on its north branch and San Miguel on the south branch.

It is reported that in the wet season this river is navigable for small boats as far as Matuguinao (18 miles) from which point there is a trail leading to the headwaters of the Catubig. During the rainy season considerable flooding occurs in the vicinity of Gandara. There is extensive mangrove swamp at its mouth.

xv. CALBAYOG RIVER. (Photos 38, 39):

West coast of Samar: Flows into Samar Sea near Calbayog. It is only a small stream and is almost dry at LW. Boats of 4ft draft were used at HW for transshipping cargo from the bay at the mouth of the river to the town. It presumably is not navigable inland. The mouth of the river is confined by two rock dykes which extend southward to a considerable distance from the shore. The wooden landings on the river bank are small.

xvi. JIBATAN RIVER:

West coast of Samar: Empties immediately east of Jibatan Point into Samar Sea. Has 1½ft of water on the bar at LW, and craft drawing 6ft can navigate a distance of three miles, and to Oquendo for boats of 3ft draft. *Bancas* can ascend as far as Magubay.

xvii. MAUO RIVER:

NW coast of Samar: Empties into Samar Sea about two miles SE of Burobodiongan Point. Navigable for boats drawing 9-12 feet of water, almost as far as the falls, one mile up, where there is a splendid water supply. The mouth offers good shelter for large launches, but it would be difficult for long vessels to enter because of the reefs encountered here.



## SECTION XI—AIRFIELDS, LANDING GROUNDS AND POSSIBLE AIRFIELD SITES

(See Map 10)

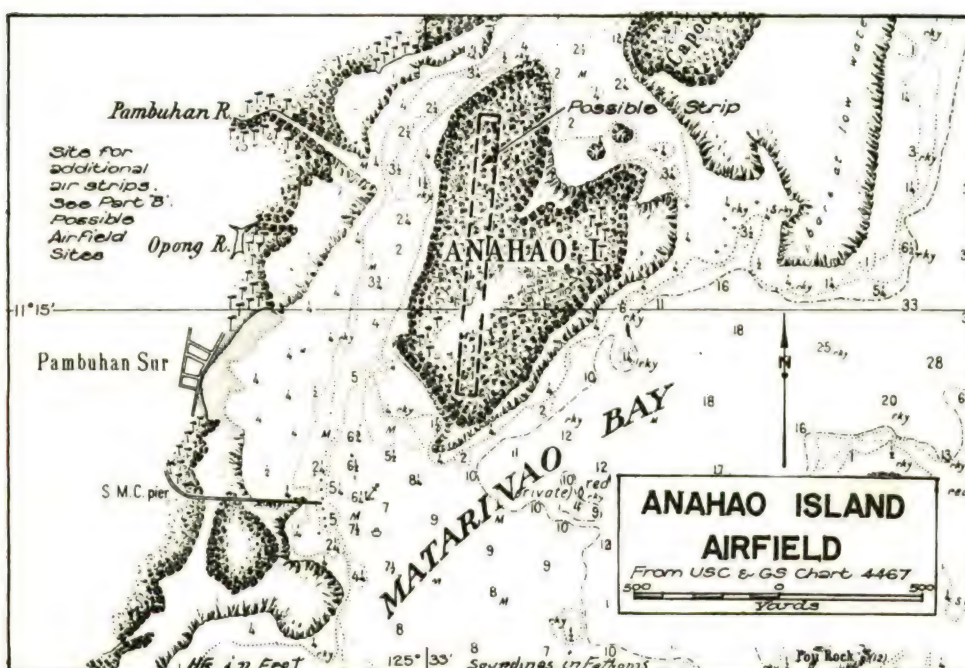
### PART A—PRE-WAR AIRFIELDS.

#### General:

No pre-war scheduled air service was available to Samar Island. There were, however, three Commercial National Airfields and one private airfield. None of these fields has the necessary military qualifications for an operational airfield and only one of them can be considered as having sufficient area for extension. Definite information is lacking on the Calbayog field, but it may also be possible to lengthen this field.

#### 1. Anahao Airfield—11° 15' N, 125° 33' E. Elevation six feet (Photo 5).

*Location:* Anahao A/F is located on the eastern coast of Samar in the only accessible harbor of any consequence along this coast. It was built on Anahao Island across a narrow, shallow, strait from Samar. (Anahao Island had no productive value and was low and level.) The island is, however, mostly swamp and the field had to be built up with several feet of crushed coral. Planes, once landed, must stay on the runway due to soft swampy conditions around the strip. The island is heavily forested with mangrove and other swamp growth.



*History:* The field was built as a private landing ground by the Elizalde Mining Co, to be used in conjunction with its Samar Iron Mining Concession at Pambuhan Sur. Medium-large vessels called at a specially constructed, overhead belt-loading dock for taking on iron ore for shipment to Japan.

*Runways:* One, NE/SW, 1965ft x 138ft; six feet above sea level, most of this height being built-up coral surfacing. Opinions differ (from 2½ to 4ft) as to the thickness of this coral runway.

*Possible Extension:* Ends of the present runway are often inundated, and considerable fill and surfacing would be necessary to lengthen the field. With fill, the NE end of the field could be lengthened about 1500 feet. A N/S cross strip of 4500 feet could be constructed; but the whole island is more or less swampy.

*Terrain:* Approaches to the site from the air are zero from all directions since the field is on an island. Water approaches are very bad, the island being surrounded by reefs and shoal water.

*Dispersal:* None.

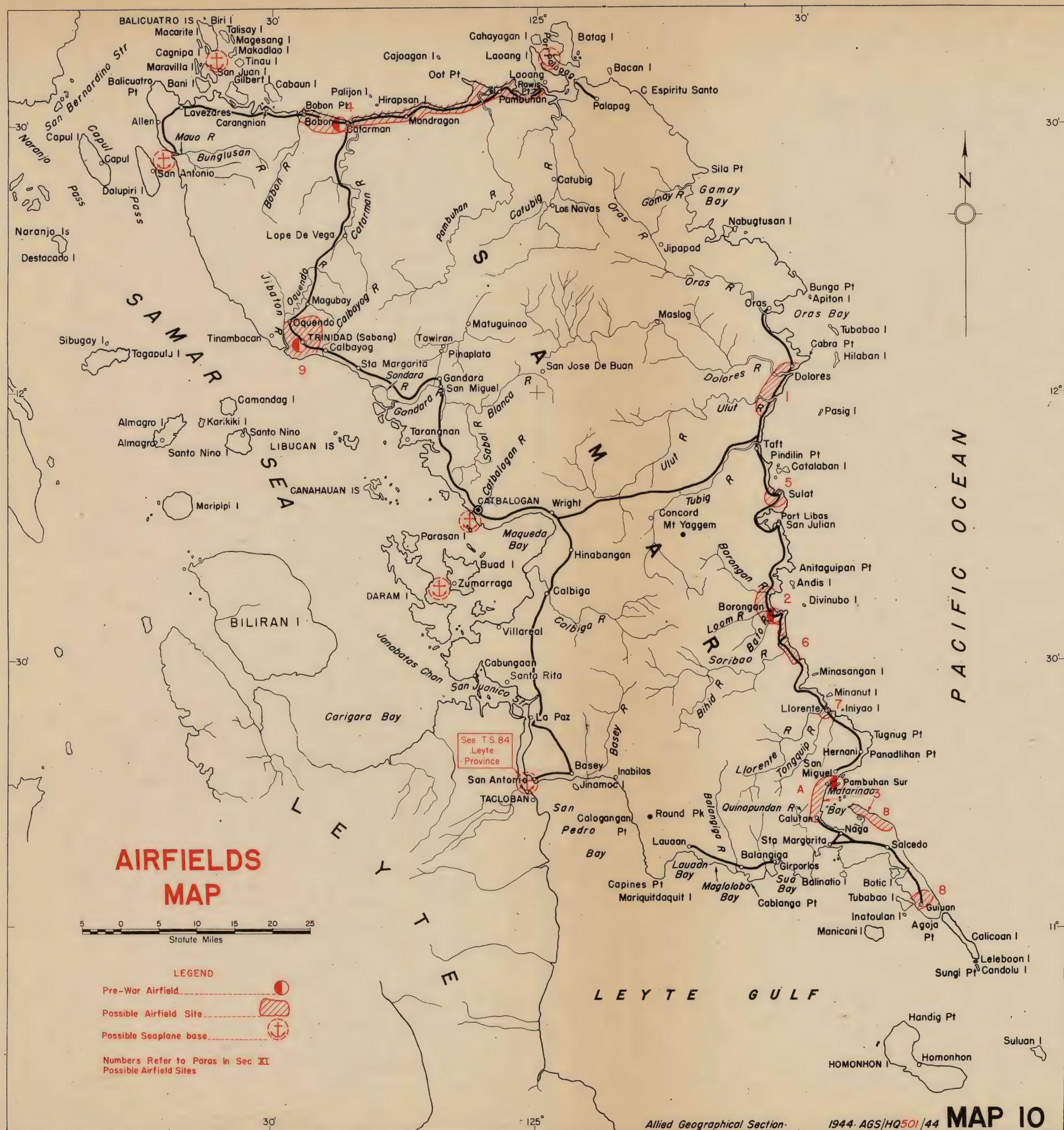
*Defences:* None. The site would be hard to defend except from guns located on the mainland of Samar.

*Engineer Materials:* Coral is abundant in the area. The whole of Matarinao Bay is fringed with a wide coral shelf which dries at LW.

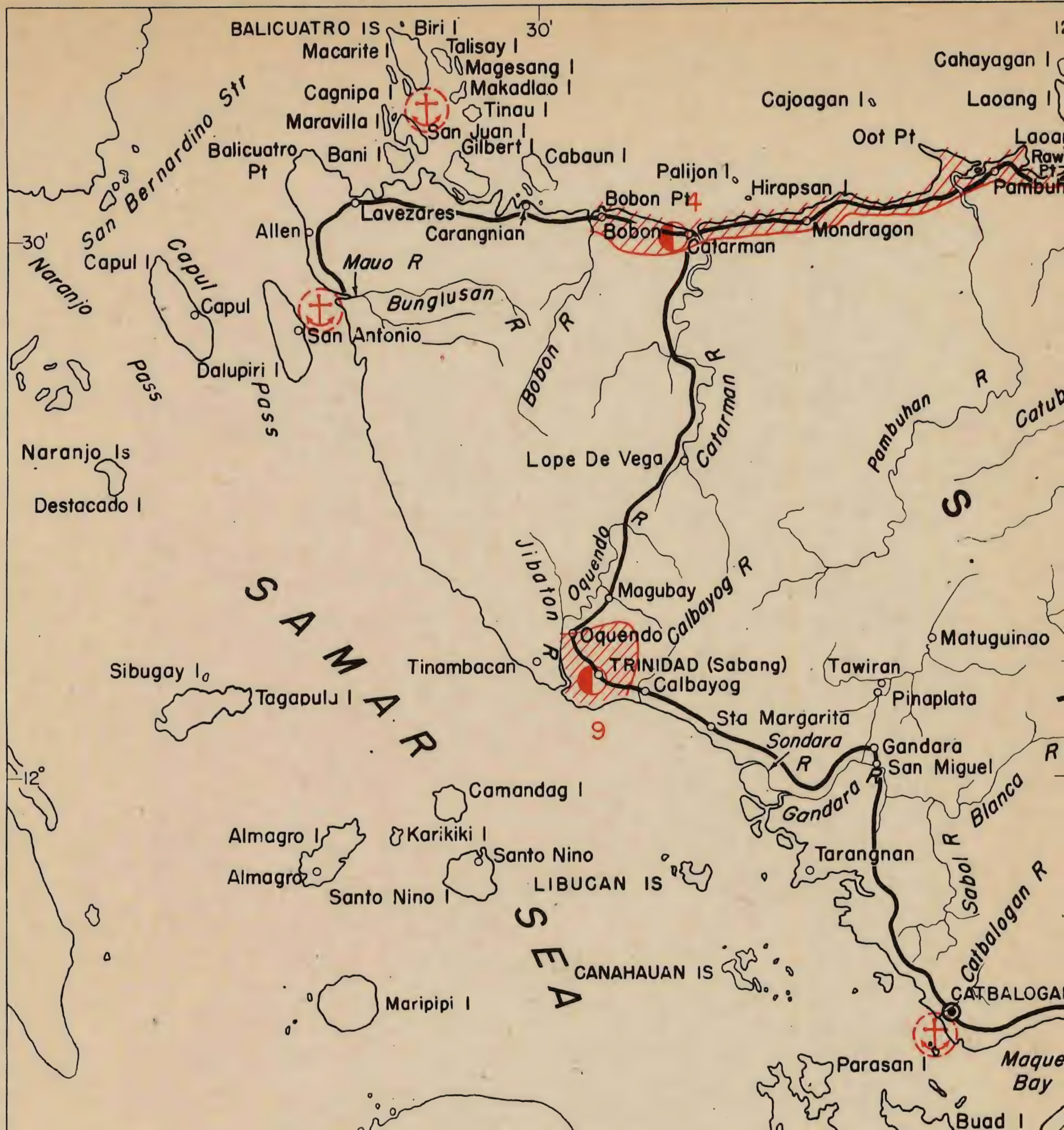
Scrub growth and mangrove cover the island with trees up to 35 feet high. Across the narrow strait on Samar is mostly coconuts leading into rain forest on the hills three-quarters to one mile inland.

Water was available from wells. Water from native streams should be treated.







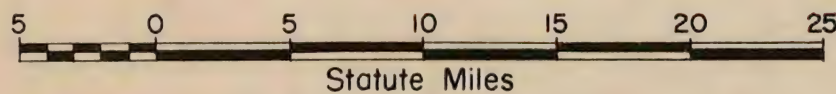





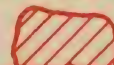





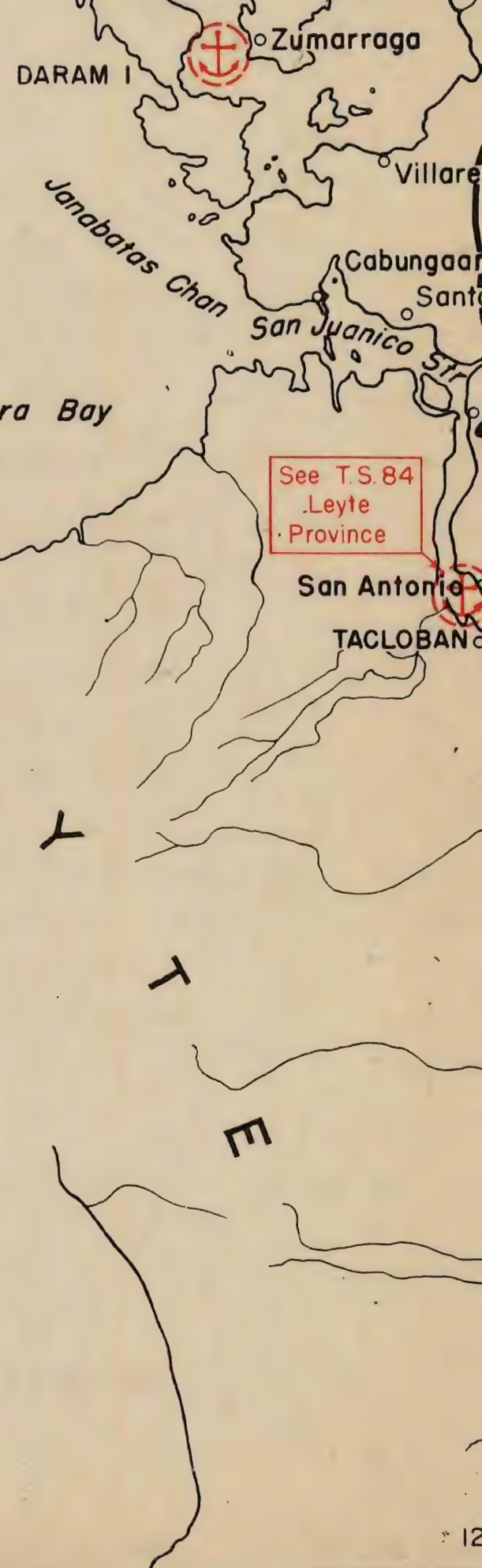
# AIRFIELDS MAP



## LEGEND

- Pre-War Airfield 
- Possible Airfield Site 
- Possible Seaplane base 

Numbers Refer to Paras in Sec XI  
Possible Airfield Sites









Coconuts and bananas, aside from native gardens, are the main foodstuffs found in the area. No water or foodstuffs are available on Anahao Island.

*General:*

i. *Roads:* Land communications to Pambuhan Sur consisted of only native trails for three miles to the north and the south. The southernmost terminus of Route 3 ends at Vigan on the coast about three miles north of Pambuhan Sur. South of Pambuhan Sur, about three miles at Calutan, a seasonal road runs east to Salcedo where it becomes all-weather and extends south to Guiuan on the west coast of Guiuan Peninsula. There was a telegraph station at Pambuhan Sur.

ii. *Meteorological:* The NE monsoon period extends from October through January and is accompanied by heavy rains and occasional typhoons. Cloud cover during the months of October through May averages about five-tenths. During the SW monsoon period, the east coast can be used for landings.

iii. *Anchorage and Harbors:* Water and air transportation were the principal methods used by the operators of the Samar Iron Mining Co.

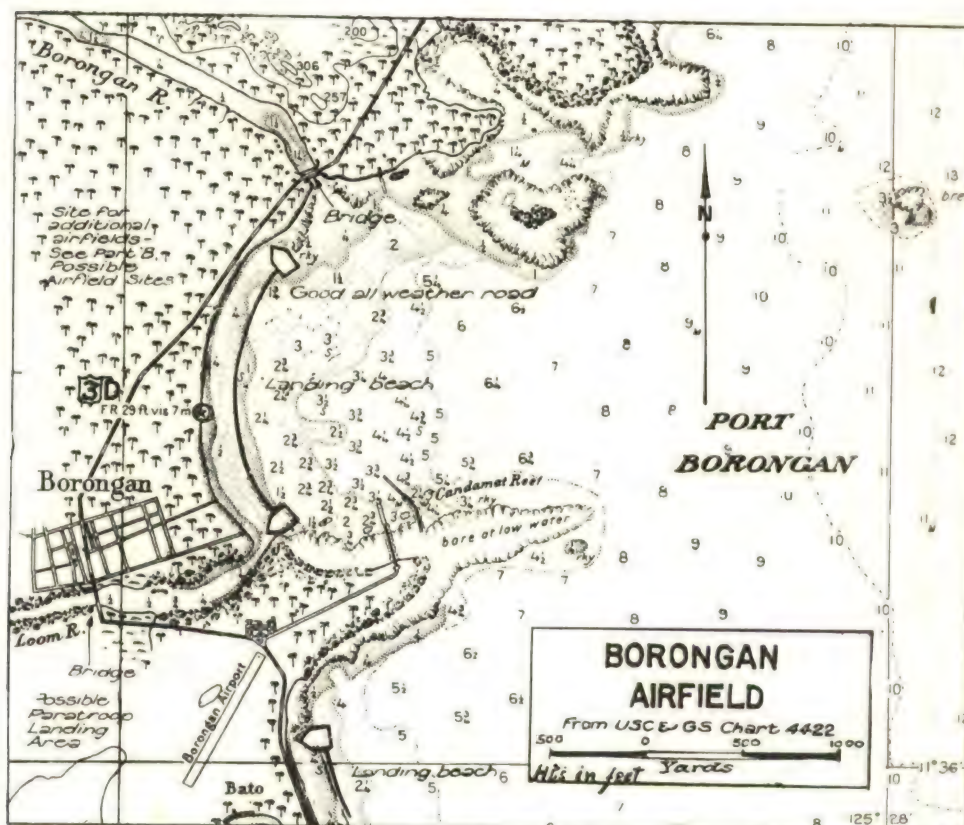
Matarinao Bay, while the best protected and most accessible harbor on the east coast of Samar, cannot be considered as a haven for many vessels. It has many shoals and reefs, most of which are easily discernible by breakers at LW. The whole of the bay is outlined with reefs, most of which bare at LW. On the immediate shore, mangroves fringe the coast. Anchorage outside the bay is impracticable due to extremely deep water and the exposure of the whole east coast to heavy seas, particularly in the NE monsoon.

The vessels which called at the Samar Iron Mining dock were almost exclusively Japanese—the ore was all shipped to Japan.

iv. *Paratroop Landing Area:* There is none suitable for landing airborne troops.

**2. Borongan Airfield—11° 36' N, 125° 26' E. Elevation 13 feet (Photo 4).**

*Location:* Borongan A/F is at the town of Borongan on a government reservation. The airfield was not a regular port-of-call for any airline. Borongan has the only other airfield on the east coast of Samar. Like Anahao field, it is hard hit during the NE monsoon. The field is surrounded by coconut trees—copra is one of the principal exports of Port Borongan. Army cadre barracks were at the NE end of the field.



*History:* Built as a Commercial National Airport, Borongan A/F was used primarily in connection with the Philippine Army Cadre reservation on which the field was located. Commercial planes stopped on call at the field.



*Runways:* One, NE/SW, 2360ft x 198ft. Runway surface was clayey loam, slippery in wet weather. Work had been started on paving a section of the strip 100 feet wide, but this project was incomplete when war was declared. Runway was level.

*Possible Extension:* Hills off the SW end of the runway and Loom River to the north prevent lengthening appreciably. By changing direction of the strip to N/S, a longer run may be obtained. There is a possibility of at least two other strips in the area. (See Part B—Possible Airfield Sites.)

*Terrain:* Terrain surrounding the field is generally level and planted with coconuts. There are some hills off the SW end of the field which give good command of the area. Three rather large rivers are in the vicinity.

*Dispersal:* There is a fair amount of good dispersal and concealment area around the field. Most of the good dispersal area is to the west of the field.

*Defences:* None known.

*Engineer Materials:* Coral and sand for roads and runway surfacing is plentiful. Beach sand along the western shore of Port Borongan and along the coast south of Port Borongan to Maydolong Cove is said to be plentiful.

Coconut trees abound along the coastal plain at Port Borongan. Heavy forest growth is on the high hills and mountainous regions two to three miles inland.

Water can be obtained from streams above the tidal influence, and from wells.

*General:*

i. *Roads:* Town of Borongan is on Route 3, which is the only road along the east coast of Samar.

Three good steel and concrete bridges are in the vicinity of Borongan. One crosses Borongan River north of Borongan; the second crosses Loom River immediately south of Borongan; the third crosses Bato River just south of the airfield. No reports of these bridges being destroyed have been received to date. Route 3 is a good coral and gravel surfaced road at Borongan.

ii. *Meteorological:* Local variations from normal conditions are not known. The NE monsoon period extends from October through January and is accompanied by heavy rains and occasional typhoons. Cloud cover during the months of October through May averages about five-tenths. During the SW monsoon period the east coast is relatively tenable and beach landings can be made along the coast.

iii. *Anchorage and Harbors:* Port Borongan offers deep water anchorage in an area of about two square nautical miles. This is mostly open and would be untenable during the NE monsoon. Normal ocean swell will be felt the year round except for a limited area to the lee of Andis Island. A small wharf (filled concrete and pile) is on the south shore of the small bay into which Loom River empties. Depths off the end of this pier in 1938 were: 21 feet at the end; 17 feet at the inner pile cluster along the eastern face and nine feet at the inner pile cluster along the western face. A concrete and stone breakwater protects ships tied at the wharf.

iv. *Paratroop Landing Areas:* There are small patches of open terrain around the existing airfield but none is large enough for any extensive airborne operations. The rest of the area is heavily planted with coconut trees.

**3. Calbayog Airfield—12° 04' N, 124° 33' E. Elevation eight feet.**

*Location:* Calbayog A/F is some four miles west of Calbayog at barrio Trinidad. No area immediately around Calbayog is suitable for airfield construction. Calbayog A/F is the newest field on Samar and was still under construction in September, 1941.

Principal industry of Calbayog is hemp. As a port Calbayog is handicapped by having no docking facilities and no sheltered harbor. All cargo for even inter-island vessels had to be loaded from small launches in an open roadstead.

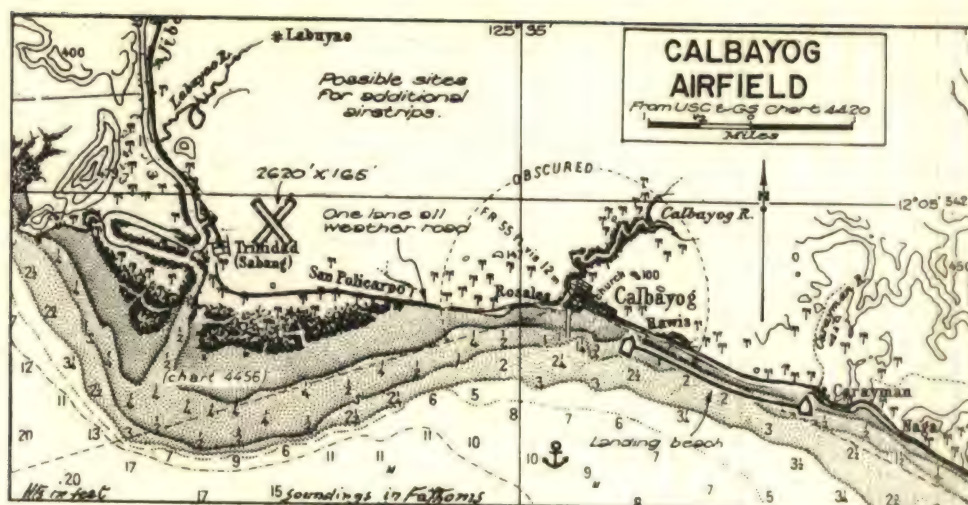
*History:* Calbayog A/F was being built as a Commercial National Airport by the Philippine Bureau of Aeronautics. There were to be two strips of equal length—an indication of the importance placed on Calbayog.

There is no information concerning completion of the field; it is believed that the work, incomplete in September, 1941, could quickly be finished.

*Runways:* Two crossing strips NW/SE and NE/SW, each 2620ft x 165ft. Runway surface was sandy loam. All-weather conditions of the field are not known.

*Possible Extension:* Definite information is not available; the field is reported to be in a level area of about six to eight square miles planted with rice and coconuts.





**Terrain:** The only definite information is that the area was formerly planted with rice and coconuts. Jibatan River is just west of the field and the mouth is heavily fringed with mangrove. The level area on which the field is located leads inland into mountainous terrain. It is fairly open from Trinidad (Sabang), east to Calbayog, probably planted with scattered coconut palms.

**Dispersal:** From reports received concerning the location of the field, it can be assumed to be fairly good.

**Defences:** Not known.

**Engineer Materials:** Principal exports of Calbayog are copra and hemp. Food and supplies are extremely limited. Information regarding construction materials is limited, but much the same conditions are believed to exist here as at other coastal areas on the island.

Good constructional timber is usually found a short distance inland on Samar and there is no reason to believe that such a condition does not exist in this area also. Quantities of sand should be available in Jibatan River and along the beaches beyond the extent of the mangrove.

**General:**

i. **Roads:** Calbayog is on Route 1, about four miles from where the road turns east after coming down through the western end of the island from the north coast. North of Calbayog, Route 1 extended north to Catarman and then west to Allen.

About  $12\frac{1}{2}$  miles of this road were under construction some 15 miles south of Catarman, but this was also to be completed in 1940. Trails and tracks ran inland from Calbayog to the *abaca* fields which are reported scattered through the area.

There were telegraph facilities at Calbayog.

ii. **Meteorological:** The western and southern coasts of Samar are spared some of the force of the SW monsoons by the islands of Leyte and Masbate. There is little information regarding the effect of the SW monsoons on these coasts.

The NE monsoons are fairly well broken up by the time they reach the west coast. Gusty winds and considerable rain are felt along the coast, since, although rugged and mountainous, Samar has no high peaks or ranges to break up rain storms. Cloud cover and monsoon seasons are much the same as for the other areas of the island.

iii. **Harbors and Anchorages:** Anchorage for Caybayog is in an open roadstead directly in front of the town. Shoal water extends off some distance in front of the area, the five-fathom line being more than one mile southward of the Calbayog light.

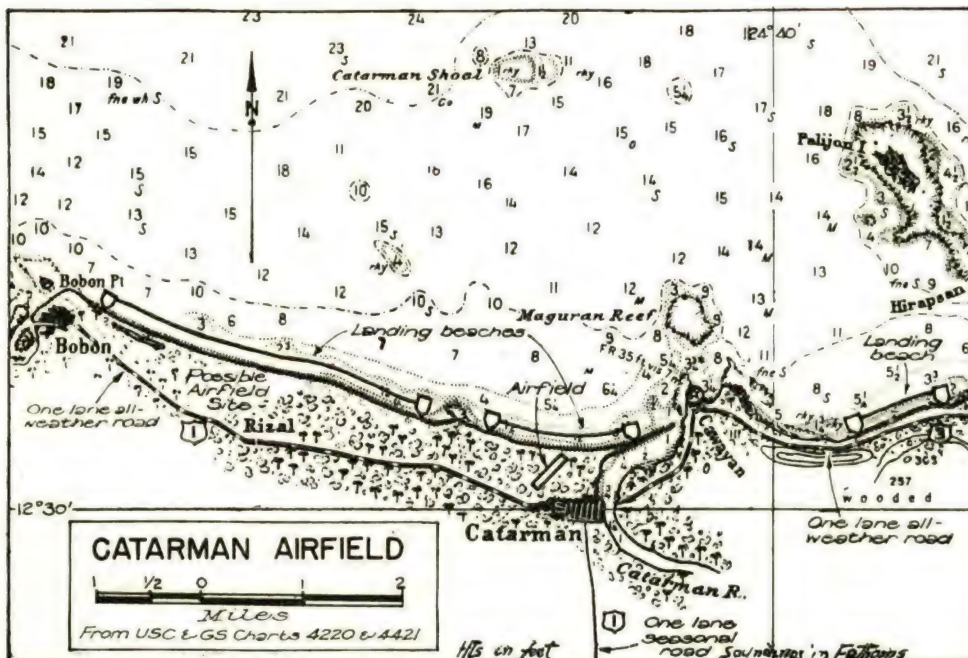
iv. **Paratroop Landing Areas:** The airfield is in an extensive area formerly cultivated with rice and coconuts. This type of terrain should be suitable for airborne operations.



**4. Catarman Airfield**—12° 31' N, 124° 38' E. Elevation six feet (Photos 1, 2).

*Location:* Catarman A/F is on the north coast of Samar at the town of Catarman. Catarman is at the junction of Route 1 going south and Route 3 coming west along the north coast from Laoang. A Philippine Army Cadre barracks is located on the SW end of the field. Catarman is the second largest town on the north coast of Samar and has 300-400 houses. The municipality of Catarman embraces some 216 square miles and had a population of 21,007 in 1941. The town of Catarman is the governmental seat and principal city in the municipality.

*History:* Catarman A/F was built as a Commercial National Airport. It was not a regular port-of-call for any airline, but like Borongan, was used in connection with the Army Cadre stationed there, and commercial planes stopped on call for passengers or cargo. The field was maintained and was in good condition except during the NE monsoons.



*Runways:* One, NE/SW, 2760ft x 330ft. The runway is sand and considered all-weather. During the NE monsoon, however, rain may fall faster than the ground or drainage can absorb it, making the field excessively wet.

*Possible Extension:* Immediately off the SW end of the airfield are miscellaneous buildings connected with the Army Cadre. Some 300-400 yards from this end of the field is the Provincial highway, Route 1. About 100 yards beyond Route 1, still SW of the field, is a large clear area that was formerly planted with rice. Between this clear area and the road are numerous houses. The field can be extended to the SW about 1200 feet without making use of the former rice fields. The rice field area might be suitable with the addition of some coral surfacing for any dry weather operation. If used for year-round operations, the rice field area should have sub-surfacing and drainage installed.

Informants state that about 2000 feet of cleared area are available here for extension of the existing field. This would make a total of 5000-6000 feet for a fighter strip. The field cannot be lengthened to the NE because of the ocean—that end of the field is on the beach now.

A good 5000ft cross strip could be put in NW/SE. The SE end would be at the edge of the town of Catarman and Catarman River, and the NW end on the Beach.

*Terrain:* Catarman A/F is located on a wide stretch of sandy beach which projects inland from the water's edge to the coastal road. Nearest high ground is some low hills across Catarman River from the town of Catarman. Hills also begin to rise about two miles inland behind the beach and curve around, meeting the beach opposite Cabaun Island west of Bobon.

*Dispersal:* Adequate dispersal with limited concealment is available for a large number of airplanes. Concealment area stretches along the coast from Catarman west to Bobon.

*Defences:* None known.

*Engineer Materials:* Principal exports of Catarman were copra, hemp and rice. Coconut trees abound all along the north coast of Samar.

Beach sand, gravel and coral are plentiful. The fringing hills which range from a few hundred yards to two or three miles in from the beach along the north coast of



Samar are generally of coral structure, with sufficient soil on them to grow trees and underbrush.

Fresh water is available from many streams above the tidal influence and from wells.

*General:*

i. *Roads:* Catarman is at the junction of Route 1 and Route 3. Route 1 parallels the coast along the north shore from Allen on the west coast and turns south at Catarman. Route 3 parallels the north coast from Laoang on the eastern end of the north coast and ends at Catarman. There is no bridge crossing Catarman River.

These are the only principal roads in the area aside from short connecting roads to the airfield and in the plantations and towns.

Telegraph facilities were available at Catarman.

ii. *Meteorological:* Conditions generally are the same along the north coast of Samar as along the east coast. Cloud cover during the SW monsoon period is somewhat higher on the north coast than on the east coast and may be accompanied with slightly more precipitation. The NE monsoons hit the north coast with full fury and coastal shipping is impracticable during most of this period.

iii. *Harbors and Anchorages:* North coast of Samar is exposed to the full force of the NE monsoons, during which there are no safe anchorages between Biri Channel on the western end of the north coast, and Port Palapag on the eastern end of the north coast. At Catarman, anchorages are in open water off the beach. The five-fathom line is approximately half a mile from the beach and anchorage is over a sand and mud bottom.

About 4½ miles out from the beach in front of Catarman is a dangerous shoal with one fathom of water at LW. Maguran reef, immediately off the coast in front of barrio Cawayan, is another hazard. This reef bares at LW and is easily discernible.

There is no harbor at Catarman nor any docking facilities other than launch jetties up Catarman River. Small boats and launches hauled copra and hemp out to the larger ships at anchor in front of the town.

iv. *Paratroop Landing Areas:* Between Catarman and Bobon north of the coastal road is scattered coconut growth and scrub and should be ideal for airborne operations. South of the coastal road a few hundred feet are large rice paddy areas which should also be suitable for airborne landings.

#### *PART B—POSSIBLE AIRFIELD SITES.*

*General:*

Extensive or even minor airfield development on Samar Island has many limiting factors.

Most important among these is the weather. The east and north coasts of Samar are so ravaged by wind, rain and high seas during the NE monsoon period that any construction along these coasts must suffer physically as well as the fields being non-operational most of the time.

The rugged hinterland of Samar limits airfield construction to narrow isolated coastal plains. Poor road communications between these small plains further detracts from them as airfield sites.

Samar Island has little more than enough foodstuffs to feed its own population. The main productive value of Samar was limited to rice, copra and *abaca*. It was short on meats and dairy products and vegetables and fruits. No foodstuffs could be considered available for troops based on the island.

Engineer materials to the extent of timber, sand and gravel, water, and coral are probably in sufficient quantities to supply the demands for such fields as could be built on the island.

#### *Description of Areas.*

##### **Area 1: DOLORES-ULUT RIVER VALLEY—12° 02' N, 125° 28' E.**

On the east coast of Samar from barrio Dolores to Ulut River is a small coastal area in which possibly two fighter strips could be built. A good (seasonal) sand landing beach and good large vessel anchorage are important features.

*Terrain:* Between Ulut River and Dolores River, and for about a mile north of Dolores River, is a coastal plain about five miles by a little more than a mile. The river boundary of the area is marked by low hills leading into mountains farther inland. The Dolores and Ulut Rivers are wide and deep behind their mouths. Sand reefs across the mouths limit entrance to HW only when vessels of 6ft draft can enter. The banks of these rivers are lined alternately with mangrove and coconut palms.

The plain between these two rivers is planted with rice and scattered coconut trees. (The small Japanese garrisons along this coast are said to be obtaining their rice from this area.)



*Dispersal:* If two strips were constructed in this area, one just north of barrio Dolores, and the other between the two rivers, adequate dispersal would be available for about 50 planes.

*Resources:* Coral and sand are fairly plentiful. A few coconut trees are scattered throughout the area, and heavier timber can be found on the hills from a mile to a mile and a half inland. Numerous rivers and streams can be used for water supply, but the water should be treated. There is no food available for other than the native population.

*Roads and Communications:* The only road in this area is Route 3 along the coast. It goes north of Dolores to Oras and south of Dolores to San Miguel. Just north of Tubig River, south of Ulut River, Route 2 branches off from Route 3 and goes west across the island to Wright on the west coast. This is the only land link between the east and west coasts. There are no bridges crossing either the Dolores or Tubig Rivers, but LCVs could be used as ferries across these rivers at all times.

Telegraph lines connected barrio Dolores with other barrios along the east coast and with the radio station at Borongan.

*Anchorage, Ports and Harbors:* Anchorage in sheltered water is available to the lee of the islands NE of Dolores. The water is sufficiently deep for the largest vessels (15-30 fathoms) and yet not too deep for good anchorage. The five-fathom line lies about a mile (statute) off the beach at Dolores. The water area between the Samar coast at Dolores and the offshore islands is reef-free and has a mud bottom.

Oras Bay, N. of Dolores, is usable by small vessels and all types of landing craft and ships. Heavy swell and shallow water make this a dangerous bay for any craft during the NE monsoon season. There are no other harbors in the area and no ports.

*Landing Beaches:* The coast from Dolores south to Ulut River has a good sand landing beach. There are a few small patches of drying coral reef close to shore which are easily discernible. The water shallows gradually from the five-fathom line about a mile offshore. Access to the shore is through scattered coconuts and sparse scrub growth. The road parallels the beach along this shore.

*Conditions affecting Defence:* The land behind Dolores is rugged and mountainous except for the valleys of Dolores and Ulut Rivers. These valleys can be controlled from the high hills on either side of them as can also the coastal plain. The hills and mountains are impassable to vehicles, either wheeled or tracked, unless along an established road, hence no serious threat can be made from the rear. Control of Routes 2 and 3 and the seaward approaches are the most important defensive measures.

*Paratroop Landing Areas:* The area between Dolores and Ulut Rivers is large enough for airborne operations, but definite information regarding the pattern of the rice cultivation and the coconut areas are not known.

## **Area 2: BORONGAN—11° 37' N, 125° 27' E.**

Located just north of barrio Borongan on the east coast of Samar is a coastal plain, about one square mile, lying between the Borongan and Loom Rivers. This plain is just across Loom River from the pre-war Borongan A/F.

*Terrain:* The area is level, sandy and heavily planted with coconut trees. Low hills just over a mile inland lead into mountainous terrain farther inland. The area is in a small pocket, hills coming down to the shore both north and south of the site. The only break in the hills are the valleys caused by the Borongan and Loom Rivers which extend inland for several miles.

*Dispersal:* Dispersal in the area would be somewhat limited since the total level area is just over a square mile in extent.

*Resources:* To construct a field in this area considerable coconut trees would have to be cleared from the site and these could be used for some types of construction. Sand and coral are abundant, and more solid timber is available on the hills inland. Fresh water can be obtained from rivers and streams inland beyond the tidal influence, as well as from shallow wells.

No foodstuffs can be considered as available for more than the native population.

*Roads and Communications:* Route 3 follows the coast; it had good concrete and steel bridges across the Borongan, Loom and Bato Rivers. It was a one-lane all-weather road most of the way north to Taft where Route 2 branches west across the island.

Borongan had a radio station and also telegraphic communication with other towns along this east coast from Oras on the north to Guiuan on the south.

*Anchorage, Ports and Harbors:* Port Borongan offers deep water anchorage in an area of about two square nautical miles. This is mostly open anchorage and would be untenable during the NE monsoon period. Normal ocean swell would be felt the year round except for a limited area to the lee of Andis Island. A small



wharf (filled concrete and pile) is on the south shore of the small bay into which Loom River empties. Depths off the end of this pier in 1938 were: 21 feet at the end; 17 feet at the inner pile cluster along the eastern face, nine feet at the inner pile cluster along the western face. A concrete and stone breakwater protects ships tied at the wharf.

*Landing Beaches:* Two sections of good landing beach are in the area, but both are definitely seasonal. Heavy swell and high surf would prohibit using these beaches during the NE monsoon period. The beach shallows very gradually and LC would ground before reaching the beach. It is reported that native porters carried produce on their backs out to small native boats at anchor a short distance offshore. The bottom is firm sand but sometimes may be covered with a soft silt carried out by the rivers after a heavy rain.

*Conditions affecting Defence:* The hinterland is rugged and mountainous and the hills and mountains are covered with heavy forest growth over which land movement would be very difficult. The Borongan and Loom Rivers are navigable by vessels of 6ft draft for several miles and their shores are lined with mangrove, coconuts and other types of vegetation. Approaches for vehicles would be limited to the established road net which, both north and south, offers several places for effective road blocks.

The sea approaches are clear and direct and offer the most effective route of approaching the area.

*Paratroop Landing Areas:* These have been described under Existing Airfields, Borongan Airfield.

### **Area 3: MATARINAO BAY—11° 15' N, 125° 33' E.**

Matarinao Bay is the largest harbor on the east coast of Samar and is on the SE end of the island.

*Terrain:* The area around Matarinao Bay offers by no means ideal terrain for airfield construction. It does have, however, the only sheltered harbor on the east coast. Even this is somewhat offset by the large numbers of reefs and small islands throughout the bay. Pambuhan Sur is the largest town on the bay and most of its inhabitants were employed by the Samar Iron Mining Co. This company had a large continuous belt ore-loading dock just south of Pambuhan Sur, from which ore was shipped to Japan.

Area 3 is divided into two sections—that area directly behind Pambuhan Sur, and north and south along that coast **indicated as 3-A**; and another area across the bay along the coast south of barrio Matarinao **indicated as 3-B**. (Map 10).

Whereas the plain behind Pambuhan Sur (3-A) is somewhat gently rolling hills, the area south of the barrio of Matarinao (3-B) is reported level. Area 3-B is inaccessible from either land or sea, the most reef-free sea approach being a small section of beach about a mile SE of the tip of Matarinao Point on the bay coast. Tracks are reported to lead from Matarinao south along the coast to other coastal cities, but no roads are available.

Area 3-A will require considerable clearing and grubbing, being heavily planted with coconuts and other growth. Some of the area is level, but much of it would need heavy construction equipment to level the area sufficiently for airfields. Two large strips could be built in this area.

Area 3-B is more level, but also heavily planted with coconut and banana trees and *abaca*. An unusual feature of this area is the 300ft-400ft high plain which rises very sharply about three-quarters of a mile inland from the beach. Airfields constructed in this area must necessarily have their long axis at right angles to the prevailing winds. This is not a desirable feature; but this area could be converted to airfields probably as rapidly as any along the coast.

*Dispersal:* Dispersal in area 3-A and 3-B would be somewhat limited and would require considerable clearing of trees and scrub.

*Resources:* Ample quantities of sand, gravel and coral are available in the area. Large forested areas surround the site and timber for rough construction is plentiful. Water is available from streams and shallow wells. The Samar Iron Mining Co got sufficient water for their mining purposes locally.

*Roads and Communications:* There were no road communications connecting the barrio Pambuhan Sur with other barrios north or south of the area. The nearest roads to Pambuhan Sur were a one-lane seasonal road north out of Vigan on the north coast of Matarinao Bay and another one-lane seasonal road south out of Calutan on the SW coast of Matarinao Bay. Poor road communications were a deciding factor in building the Anahao landing field.

Telegraphic messages to the mine office were telephoned from the telegraph office at Hernani.

Approach to the area by sea is direct, but caution must be exercised in using Matarinao Bay, as it is encumbered with numerous shoals, reefs, and small islands.



*Anchorage, Ports and Harbors:* Matarinao Bay, while the best protected and most accessible harbor on the east coast of Samar, cannot be considered as a haven for many large vessels. It is generally full of shoals and reefs, most of which are easily discernible by breakers at LW. The whole of the bay is outlined with reefs which also bare at LW. Some of these are quite extensive. On the immediate shore mangroves fringe the coast. Anchorage outside the bay is impossible due to extremely deep water and the exposure of the whole east coast to heavy seas, particularly during the NE monsoon period.

The vessels which called at the Samar Iron Mining Co pier were almost exclusively Japanese, hence information regarding approaches to the bay is limited to that contained in the *US Coast Pilot*.

*Landing Beaches:* Generally speaking, there are no good landing beaches in Mararinao Bay. Natives pulled their small craft on to a beach in front of barrio Pambuhan Sur, probably at HW, since the charts show shallow shoal water in this area at LW. The higher HW reading at Matarinao Bay is 5.0 feet with a lowest tide of -1.5 feet. The bottom of the bay at this point is sand.

*Conditions affecting Defence:* Approaches to this area by land are most difficult. Thickly forested high hills and mountains are only broken by occasional rivers or streams. The Pambuhan River valley is the largest break in the hilly country back of Pambuhan Sur, but is thickly forested and the river is navigable only for small native craft.

The whole of the Matarinao Bay area can be commanded from the high hills surrounding the area.

The area outlined as 4-B is dominated by a high (400ft) level, coral formation rising abruptly about a mile from the beach. This ridge extends from Matarinao Point about 27 miles down the coast to Sungi Point and is remarkable for its length, narrowness (300-400 yards) and its abrupt steep faces, both along the coastal side and where it is broken by passes through it. The slope to the west is gentle. Approaches to this areas from the sea are hindered by a wide, drying coral reef at LW.

*Paratroop Landing Areas:* None known.

**Area 4: CATARMAN**—12° 31' N, 124° 38' E. Elevation 6 feet.

The area included in this site involves a more or less level plain extending from Bobon on the west to Laoang on the east along the north coast of Samar Island.

The plain varies in width from less than half a mile in places to three miles, and is largely cultivated with rice and coconuts and scattered produce farms.

*Terrain:* Since this north coast is one of the most extensively developed agricultural regions on the island, it has probably more level, scrub-free terrain than any other section of the island.

Geographically the area consists of a sandy beach area along the shore of from about 100 feet to several thousand feet in width. This fringe is solid and generally planted with coconut trees. Behind this beach area the ground slopes gently downward to below sea level in places and is inclined to be swampy most of the year. Medium to high hills rise behind the low area. These hills are generally of coral or limestone base.

In places along this coast, the hills extend down quite close to the beach as at Cawayan near Catarman.

From Bobon to Catarman, a distance of about five miles, is the best stretch for airfield construction. The sandy beach area is at its widest here stretching inland about two miles from the coast. The area is quite level, and scrub growth and coconuts are in scattered patches between the road and the beach and for some distance beyond the road inland. In dry weather the area could probably support all types of aircraft, but in rainy weather large puddles of water are said to accumulate in places necessitating artificial drainage and surfacing.

From Catarman to Mondragon the area is better utilized by airfields running parallel to the beach since the sandy beach fringe here is quite narrow. Inland behind the road the terrain drops gradually to low swampy areas before rising into the hilly country.

From Mondragon to Laoangan, the area is generally similar to that described for Catarman to Mondragon. However, in this area will be found occasional cultivated areas extending inland for some distance. These are on stretches of high ground which reach back, finger-like, into the low area. It has been suggested that sections of the road along this coast could be used as a basis from which to start an airfield.

From Laoangan to Laoang the best airfield sites consist of clearing coconut trees away from either side of the road and using the road-bed as a runway.

*Dispersal:* Adequate dispersal is available in the Bobon-Catarman area, but only limited dispersal area is available from Catarman to Laoang.

*Resources:* Large quantities of coral and sand are available along this coast. Limestone hills are just back of the low area and are said to be able to furnish ample



quantities of crushed rock. Good construction timber may be scarce in the immediate area though the mountains a few miles inland are known to be heavily forested. Considerable coconut trees are available all along the coast. Fresh water is available from countless streams and numerous wells.

*Roads and Communications:* Routes 1 and 3 join at Catarman. Route 1 goes south and west from Catarman and Route 3 goes west from Catarman. Both of these roads are reported to be in good condition, although a section of Route 3 is shown as being only seasonable.

Telegraphic communication with other towns along the north coast and with other towns and barrios along Route 1 south was available. There was a radio station at Laoang.

*Anchorage, Ports and Harbors:* The north coast of Samar is exposed to the full force of the NE monsoons, during which there are no safe anchorages between Biri Channel on the west and Port Palapag on the east. At Catarman, normally, anchorages are in open water about a mile off the beach. The five-fathom line is approximately half a mile from the beach.

There is no harbor or docking port for large vessels along this north coast. Biri anchorage, on the SE side of Biri Island, was used as a shelter by vessels caught in these waters during bad NE storms or typhoons. Sheltered anchorage can also be found in Port Palapag, west and south of Batag Island on the east end of the north coast.

*Landing Beaches:* Several sections of landing beach suitable during the SW monsoon period are found along this north coast.

Best beach sections are found:

- a. From Bobon to Catarman River;
- b. South of Hirapsan Island at Maquiualo;
- c. Along the coast west of Mondragon;
- d. In the Bantayan Bay area;
- e. In the Laoang Bay area.

*Conditions affecting Defence:* Land movement along this north coast is relatively easy and an extended beach area makes landings along the coast possible at several different places.

Some high ground is close to the beach east of Catarman River, but otherwise the hills are all inland and do not offer particularly good vantage points from which to command the area.

The most important defensive measures to be taken in the area are against air attacks from nearby Luzon. (The town of Legaspi, in the Bicol region of Luzon, is less than 100 air miles from Catarman.)

*Paratroop Landing Areas:* Several good paratroop landing areas probably exist along this north coast but aerial photography would be required to pinpoint them. The area around Catarman A/F is relatively level and free of heavy growth. Airborne troops could land in this area.

#### DESCRIPTION OF OTHER POSSIBLE AIRFIELD SITES.

##### **Area 5:** SULAT—11° 49' N, 125° 27' E.

An area of nearly two square miles of level, coconut country is just south of barrio Sulat. The main disadvantage of this area is the lack of good landing beaches. Sulat Bay has a firm sand bottom at its head but is very shallow and even landing craft would ground  $\frac{1}{4}$  mile from shore at LW. During the NE monsoon period high surf is experienced in this bay and landings would be impracticable. A small ferry operated across the narrowest part of Port Libas before completion of the road around the port and it is reported that its landing place on the north shore of the port near Cannomanda Point was on a sandy beach. The chart shows all of this area to be mangrove-fringed.

The area under consideration as an airfield site is firm sand and coral soil. Inland, high hills heavily forested rise to mountainous terrain. Sulat River is navigable for 6ft draft vessels but can only be entered at HW.

##### **Area 6:** SORIBAO—11° 33' N, 125° 28' E.

Two level coconut-planted areas, one north of Soribao River and the other south, have possibilities as airfield sites. Sections of good landing beach and firm sandy soil enhance the value of this area. Two fresh water springs south of Soribao River along the coast are shown on the chart. The hills rise rather abruptly about a mile inland so that any fields constructed in this area must lie parallel to the beach.

Two fields in this area, with two fields in the Borongan area just to the north, would comprise a fair-sized air base.



**Area 7: LLORENTE**—11° 24' N, 125° 33' E.

A small, level, coconut-planted area of about one square mile in extent is located immediately south of Lanang River. Barrio Llorente is located on this plain.

A good landing beach in front of Llorente would permit landing craft to reach the shore at any tide, but would be limited to SW monsoon period since heavy seas are experienced here during the NE monsoon. The suitable area is now partly occupied by barrio Llorente whose frame and nipa houses could be easily levelled. The strip would be NE/SW and the Lanang River valley could be used for approaching the field.

**Area 8: GUIUAN**—11° 02' N, 125° 44' E.

From the town of Guiuan east to the small barrio Cogon, about two miles, is a very level plain of about two square miles. The ground is composed of about two feet of clay soil on hard coral limestone sub-base. The area is now heavily planted with coconut trees.

The most undesirable feature of this peninsula area is its inaccessibility by water approaches. The coast all around the peninsula is reef-bound and dangerous to land on with small boats. The only sea outlet is a 300 yard concrete and stone causeway at Guiuan. Even this causeway is dangerous to approach because of reefs and shoals along the Leyte Gulf shore of the peninsula.

A road (Route 3-C) connects Guiuan with other small barrios as far north as Matarinao Bay.

**Area 9: CALBAYOG**—12° 04' N, 124° 33' E.

The Calbayog area (covered under Existing Airfields—Calbayog), has sufficient area for one or two more strips. The area is reported to be rather extensively planted with rice and scattered coconut trees. It is probable that artificial drainage would have to be installed as well as surfacing for the strips.

Calbayog has road connections both north and south, as well as telegraphic facilities.

At one time the Basey area, on the south coast of Samar, and Jinamoc Island, just offshore from Basey, were thought to be suitable for airfield construction. Although Jinamoc Island appears low from vessels offshore it has been reported as quite rolling and hilly and its terrain unsuitable for airfield construction.

The area behind Basey has also been said to be hilly and rolling and would require heavy construction equipment to develop it for airfield construction. Some ricefield lands in the area could possibly be converted to airfields with proper drainage and surfacing.

None of the other off-lying islands in Samar Province is known to have any potential airfield sites.

**PART C—SEAPLANE BASES.**

**1. Operational:** None.

**2. Landing Places:** There are no known places where seaplanes operated from Samar Island before the war.

No reports have been forwarded of the Japanese operating seaplanes in the waters around Samar.

**3. Possible Landing Places:**

**a. EAST COAST:**

No place along the east coast is suitable for development as a seaplane base. Emergency landings could probably be made during the SW monsoon along this coast at several places provided the pilot hugged the shore.

The most desirable place for alighting would be in the channel between Hilaban Island and reef and the mainland. This water would also be the quietest of any along this coast during the NE monsoon. The plane could taxi fairly close to shore on the sandy beach between the Dolores and Ulut Rivers.

**b. SOUTH COAST:**

Since the south coast is lacking in military importance due to the rugged mountainous terrain along the shore and the dangerous shoal and reef condition which extends for more than two-thirds of the total south coast, there is no significance attached to the possibilities of seaplane alighting areas along this coast.

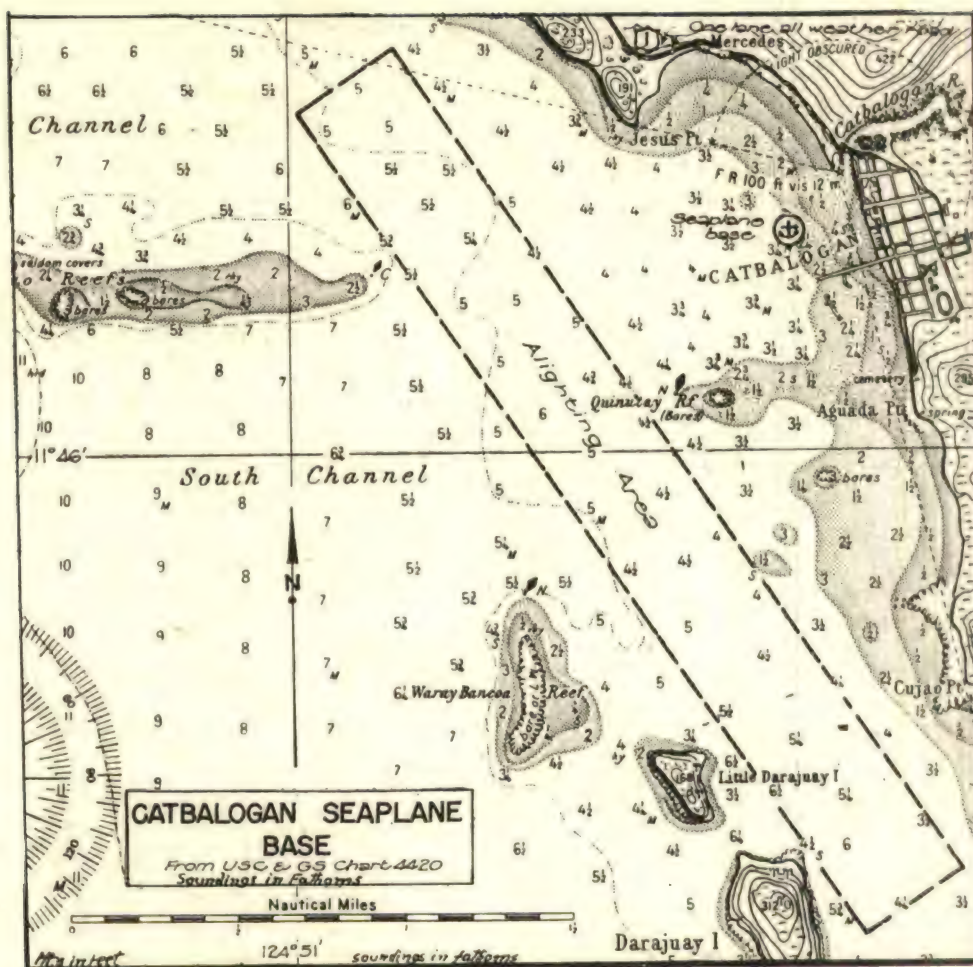
In the event of emergency, however, the best alighting place is San Pedro Bay, west of Jinamoc Island. The area recommended is the approach channel to San Juanico Strait (See Chart 4423). Shallow water and reefs must be guarded against when using San Pedro Bay at any other place.

**c. WEST COAST:**

The west coast has the best possibilities for seaplane bases of any of the waters surrounding Samar.

**i.** A good site is just SW of the capital town of Catbalogan. Between the Darajuay Islands and the mainland is an area nearly a mile wide and extending NW

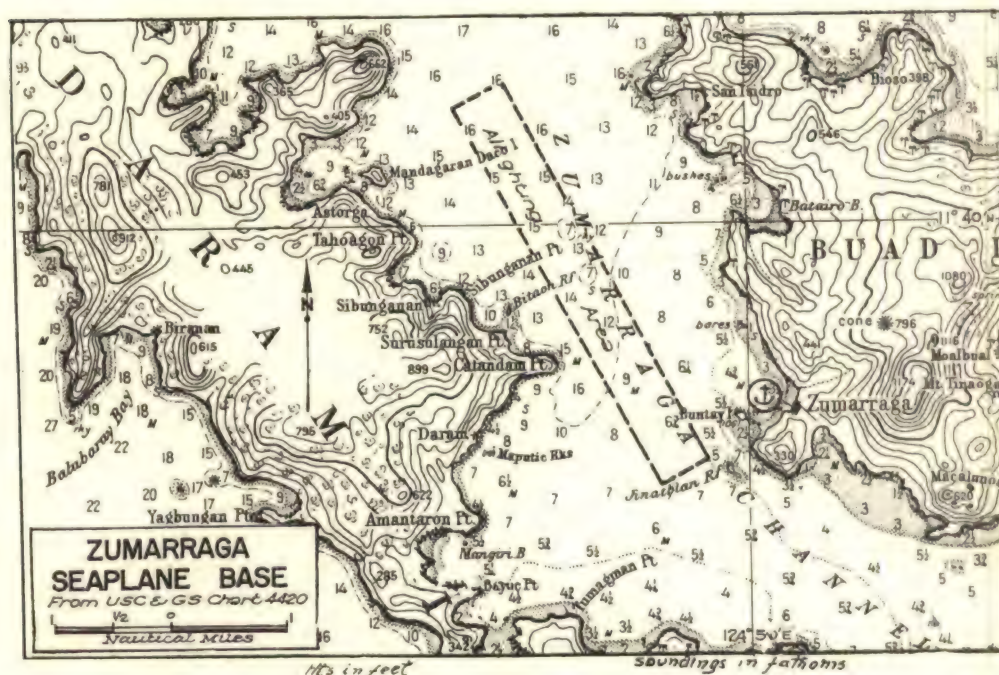




for three nautical miles. The aircraft could be based at Catbalogan. The water is sufficiently deep and during the NE monsoons is well sheltered. During the SW monsoons the area is partially protected by the large island of Daram, but it is thought that excessive swell would be encountered much of the time.

ii. If it were considered advisable to develop Buad, Daram, and Parasas Islands, Zumarraga Channel between Buad and Daram Islands would make a good seaplane alighting area. This channel is sheltered to a large degree from both monsoons.

Seaplanes could be based at the town of Zumarraga on the west coast of Buad Island. A good sand beach and sheltered anchorage in front of the town are desirable features.





The water is sufficiently deep and the approaches in both directions are clear. An alternate run NE/SW can also be made when winds are unfavorable for use of the plotted run. This run, however, would necessitate rapid climbing to clear land masses at either end.

iii. The third possible site on the west coast is Dalupiri Pass, between Dalupiri Island and Samar.

Dalupiri Pass is about seven nautical miles long and two nautical miles wide and sufficiently deep throughout. The pass is sheltered from heavy swell during both monsoons, but tide rips are encountered off either entrance to the pass.

This site is close to Luzon Island and could be developed as a patrol bomber base for planes operating against shipping around Luzon. Dalupiri Island could be used for basing facilities for flying boats and sufficient area is available on this island for extensive construction. Large vessels can come close to shore along the east side of the island and ground reconnaissance may show the possibility of constructing an airstrip on the north end of the island for land-based airplanes.

#### d. NORTH COAST:

Two areas on the north coast would be suitable during part of the year for seaplane alighting sites. These are Port Palapag and Biri Channel.

i. *Biri Channel* is not too good a site since basing facilities are undesirable. The larger islands of Biri and San Juan are reef-bound and heavily forested. Considerable mangrove lines their shores.

Biri Anchorage, the haven for vessels caught in this area during bad weather, would be good anchorage for flying boats but has no reef-free areas bordering Biri Island. A wide drying reef completely surrounds the deep water.

ii. *Port Palapag*, has possibilities as a good alighting area provided either Laoang Island or Batag Island are used for base facilities. Both of these islands are heavily forested and hilly but could support rather extensive construction.

Port Palapag is sheltered from high seas in both monsoons, but both it and the Biri site could not be used during heavy NE monsoon weather. These areas are unshielded from the NE monsoon winds and would be quite untenable.

□ □

## SECTION XII—ROADS AND TRAILS

(Maps 11-A and 11-B)

(Photos 1, 2, 4, 15, 16, 17, 31, 32, 33, 34, 35, 38, 39)

### 1. GENERAL:

Information on roads has been obtained principally from informants who have been over them since 1938.

Road distances are given in miles along the road. The word "about" indicates that some sections involved have been estimated, and will contain a varying margin of error. Kilometer distance posts exist on some of the roads.

Designation of route numbers follows that used by the US Army Map Service and the Philippine Bureau of Public Works.

Roads have been classified as follows:—

*Two-lane all-weather:* Usually 16ft base and surface. Four feet shoulders. Culverts 16 feet, bridges usually only 10 feet wide. Maintained as a "First Class Road" by the Philippine Bureau of Public Works.

*One-lane all-weather:* Usually 9ft base, 2ft surface, 4ft shoulders. Vehicles pass by driving on the thinly surfaced shoulders. Culverts 16 feet, bridges 10 feet wide. Maintained as a "First Class Road" by the Philippine Bureau of Public Works.

NOTE: Philippine Bureau of Public Works road classification for the above road types is:—"First Class Roads: Well graded and surfaced, thoroughly drained and constantly maintained. Bridges and culverts are usually complete and permanent and, when missing, their places are almost always supplied by ferries capable of carrying automobiles weighing two tons or more. Continuously passable at all times with possible exceptions during typhoon periods."

*One-lane seasonal:* Usually 9ft surface. Some sections have no added surfacing or shoulders; bridges and culverts 10 feet. Frequent turnouts for passing. Maintained as a "Second Class Road" by the Philippine Bureau of Public Works.

NOTE: Philippine Bureau of Public Works road classification for this kind of road is:—"Second Class Roads: Fairly graded, partially or naturally surfaced and generally intermittently maintained. Bridges and culverts usually complete and partially temporary. Continuously passable for vehicle traffic during dry season but more or less impassable during the rainy season."



# ROADS MAP

## SAMAR NORTHERN PART



Physic Projection

Elevations in Meters

COAST AND GEODETIC SURVEY

MANILA, P. I.

1940

Sources of Information

U.S. Coast and Geodetic Survey

U.S. Army Engineers

Bureau of Public Works

Bureau of Forestry, and other

Provincial and Municipal Officials

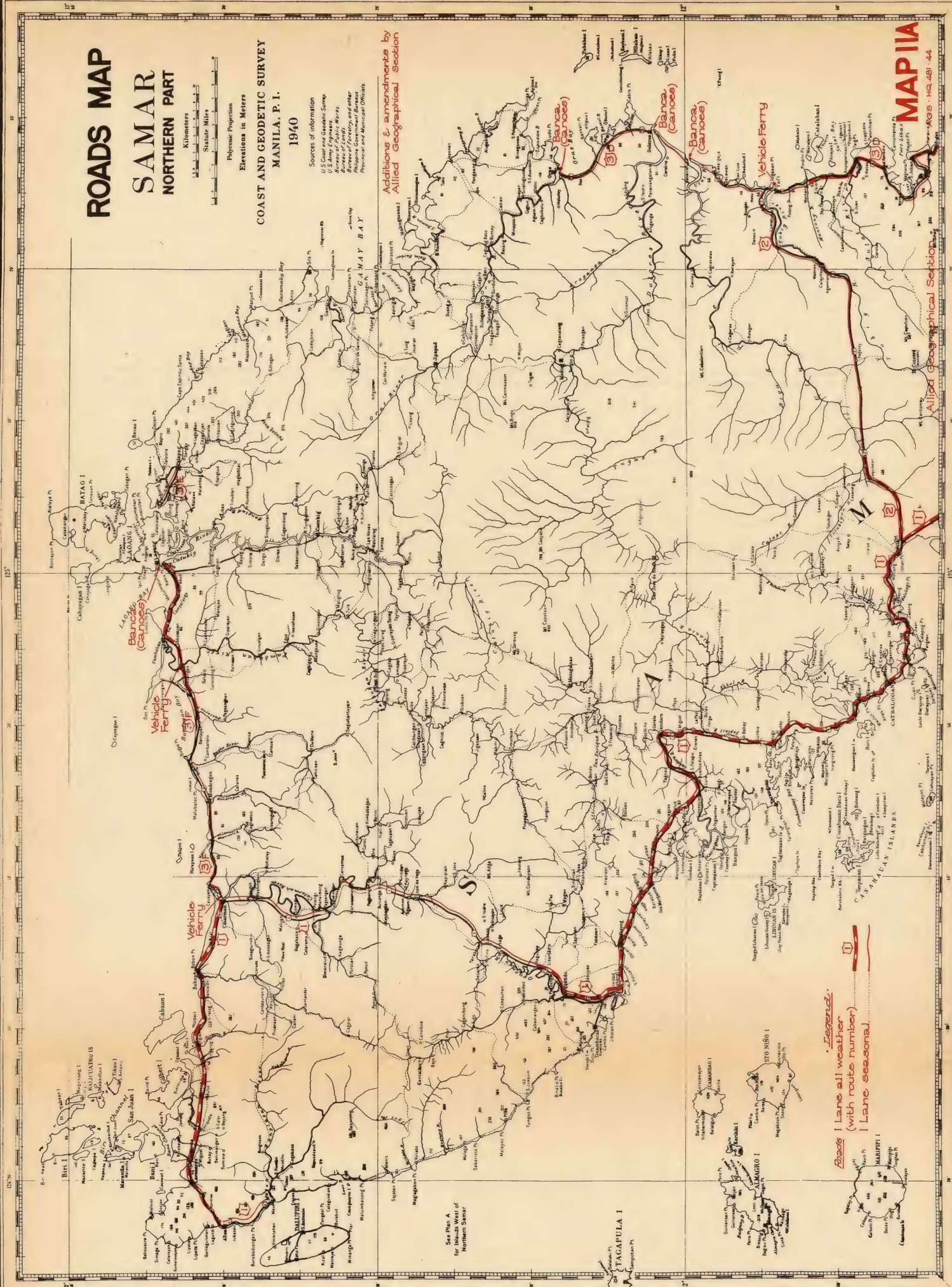
Additional & amendments by  
Allied Geographical Section

See Plan A  
for details of  
Northern Samar

YAGAPULA I

**Legend:**  
Roads | Lane all weather  
(with route number)  
| Lane seasonal

**MAP IIA**  
Allied Geographical Section  
HQ AGS - HQ 481 - 44



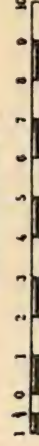


# ROADS MAP

## SAMAR

### NORTHERN PART

Kilometers



Statute Miles



Polyconic Projection

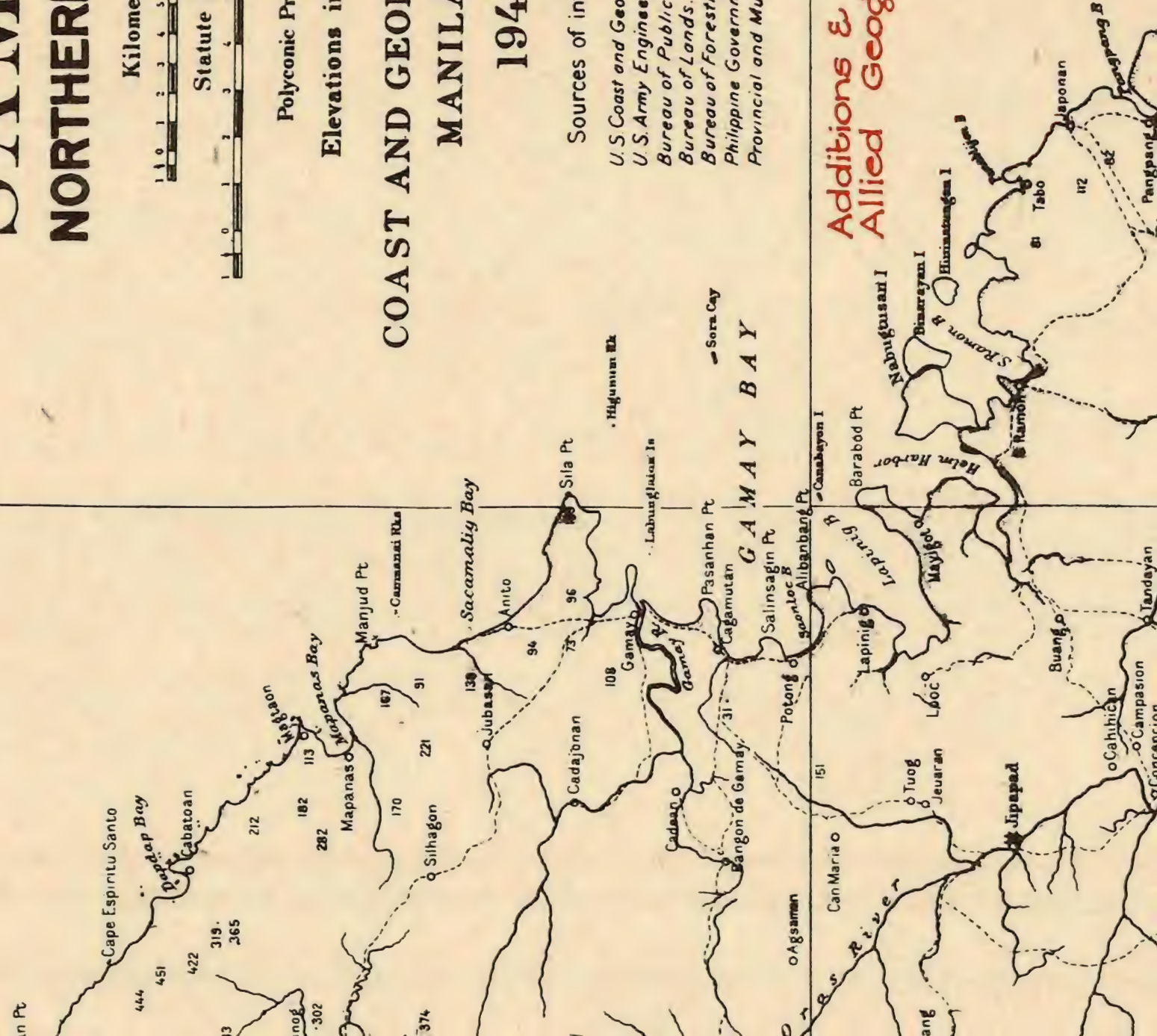
Elevations in Meters

COAST AND GEODETIC SURVEY  
MANILA, P. I.  
1940

Sources of information

U.S. Coast and Geodetic Survey.  
U.S. Army Engineers.  
Bureau of Public Works.  
Bureau of Lands.  
Bureau of Forestry, and other  
Philippine Government Bureaus.  
Provincial and Municipal Officials.

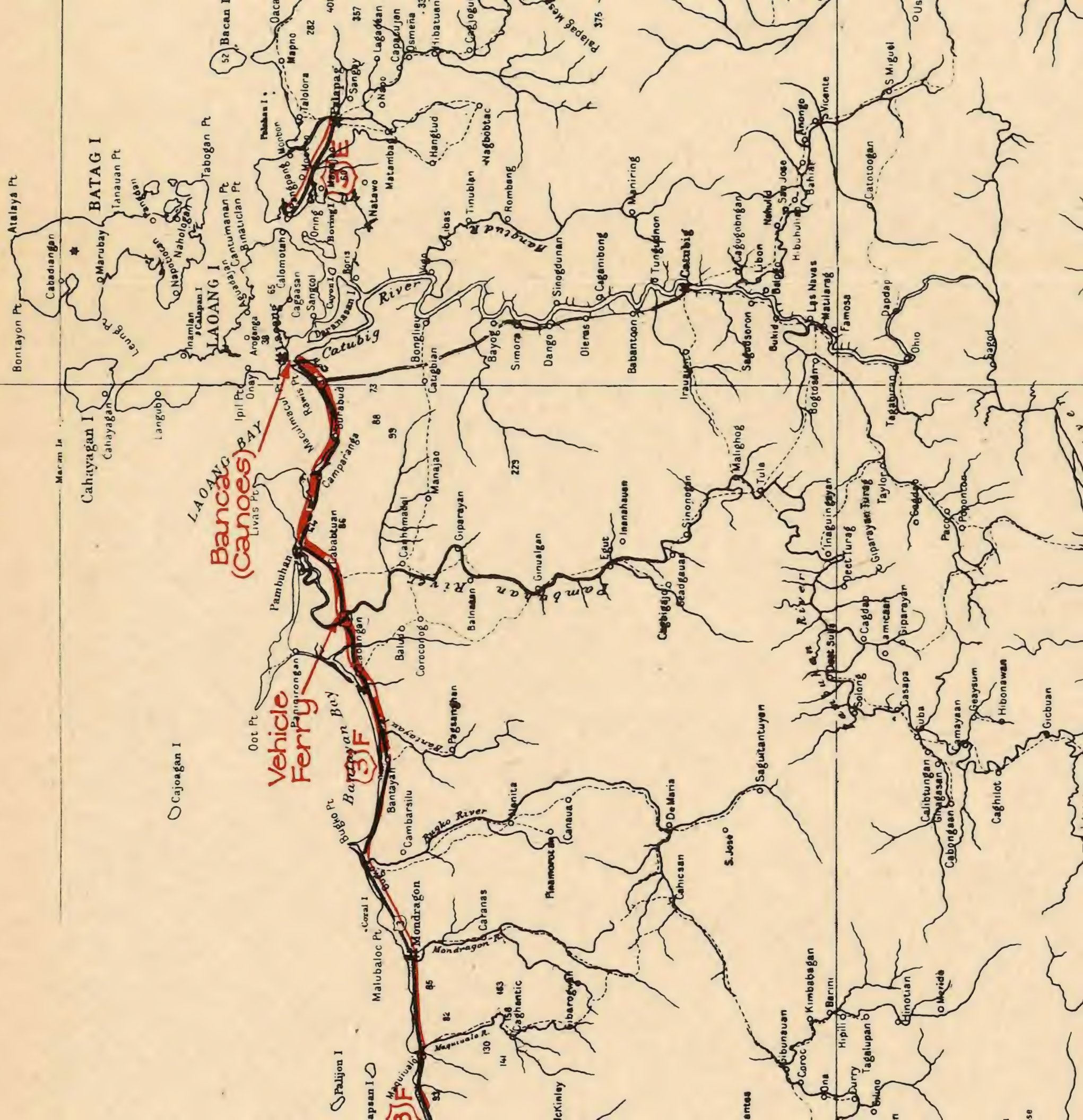
Additions & amendments by  
Allied Geographical Section



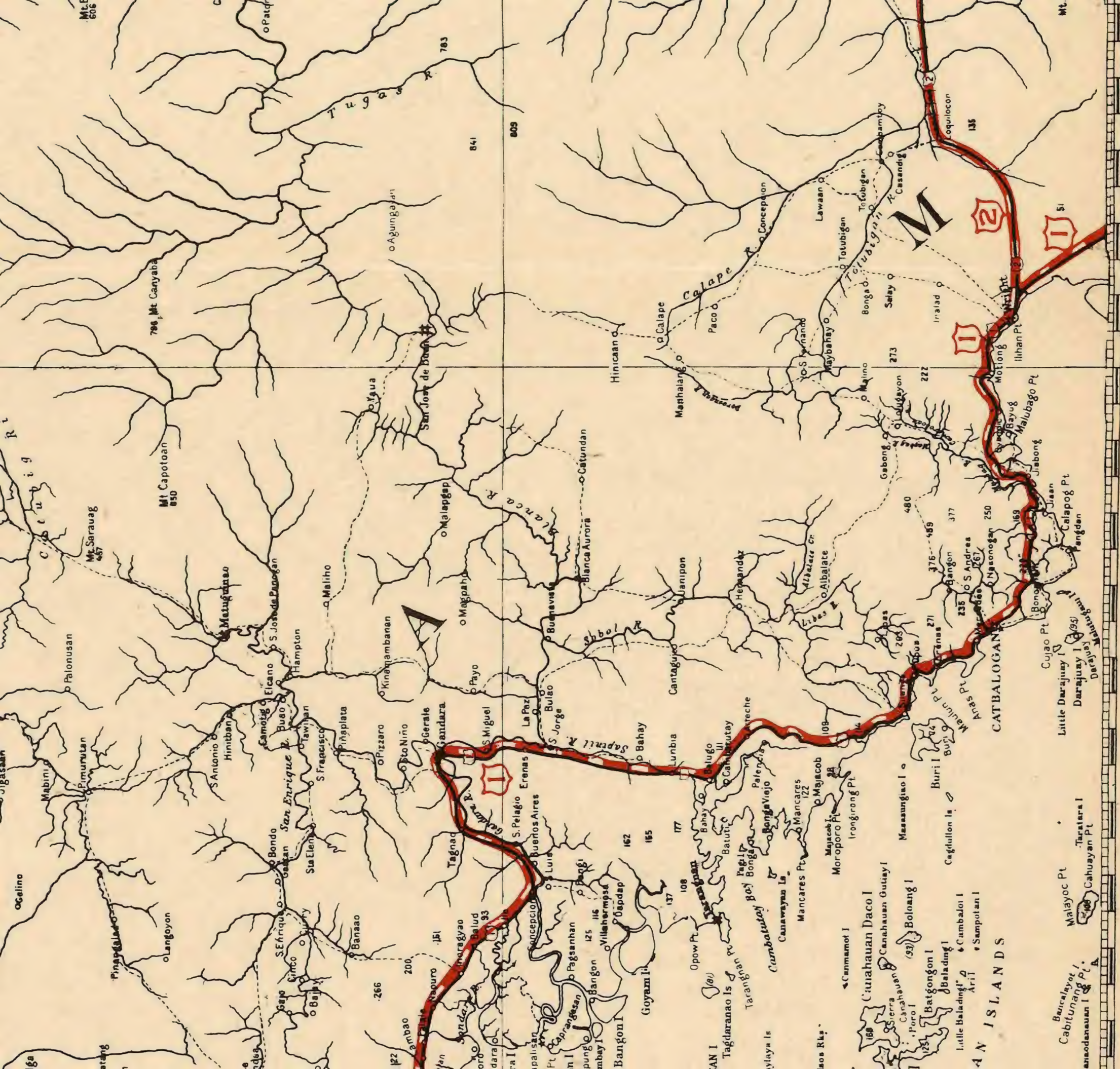








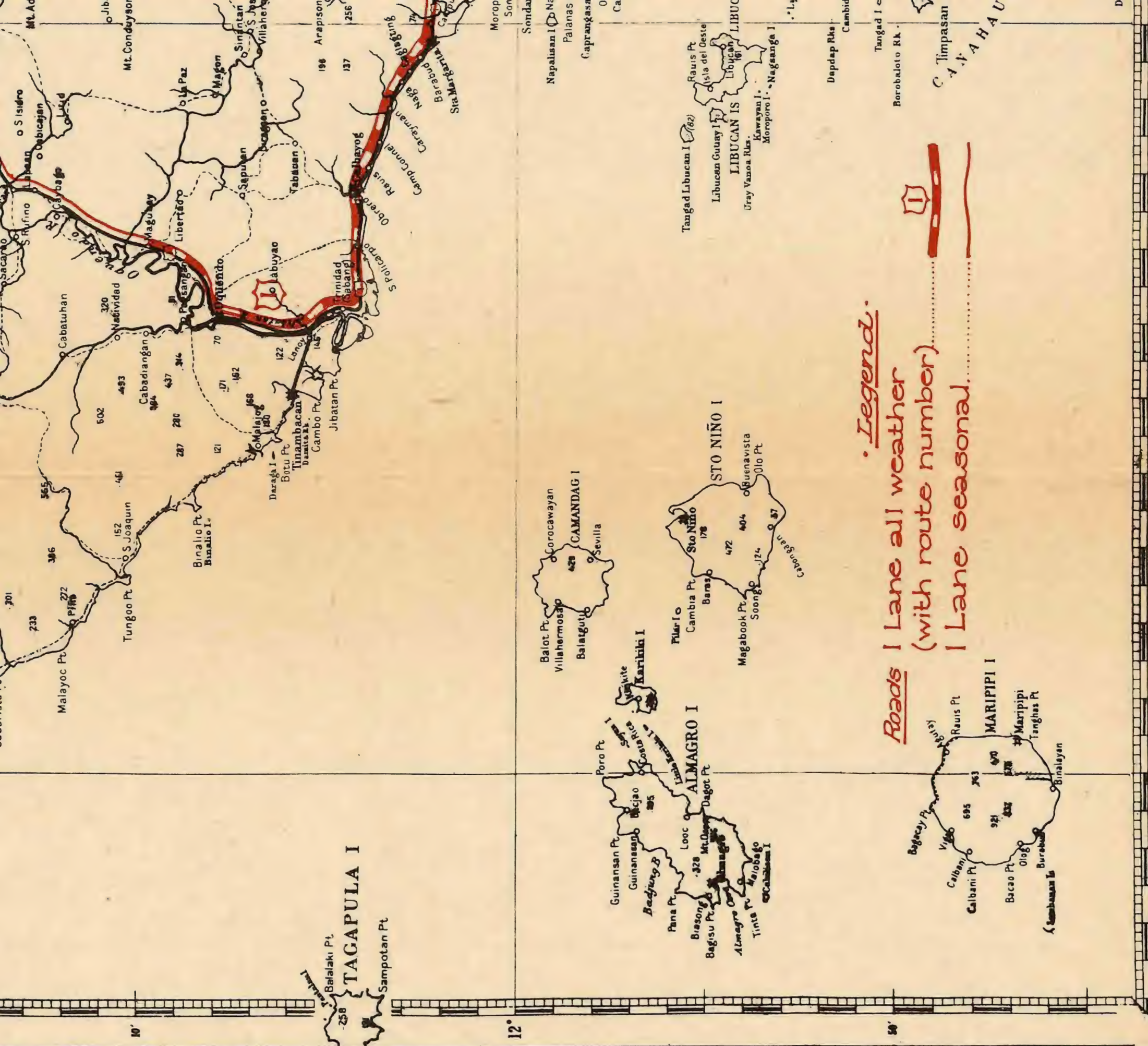












Legend.

Roads 1 Lane all weather

(with route number).....

1 Lane seasonal.....



This aspect is dealt with in some detail because the Philippine Bureau of Public Works road classification covers their passability for automobile traffic in various weather conditions without giving specific measurements from a military standpoint.

Trails have been confirmed where possible by informants and no alterations to those recorded on the base map have been found necessary. Attention is drawn to the fact that many trails, referred to by informants as "Good Carabao Slide Trails" have worn deeply into clay soil for a width of 3-4 feet only, rendering them impassible for jeeps even in dry weather.

A warning to drivers on many roads in this area concerns the use of loose river gravel surfacing on some sections. This has caused many road accidents.

**There are no sections of road in this area where drinking water is likely to be a serious problem.**

Bridge measurements, where given, are in the order

- a. Length;
- b. Width and—
- c. Height above stream bed.

## 2. DETAILED DESCRIPTION:

The following road summary deals briefly with all known roads on the island. For detailed description of roads see "Mile by Mile," sub-section 3.

### a. Route 1 (Samar):

Commencing at La Paz (11° 24' N, 124° 59' E) on the SW coast of Samar Island, Route 1 runs northwards near the west coast to Jibatan River mouth, thence inland to Catarman on the north coast; thence westwards to Mauo on the NW coast, a **total distance of about 170 miles.**

At La Paz there is a vehicle ferry landing for the service across the narrow S Juanico Strait to Guintiguian on the NE tip of Leyte Island. A one-lane seasonal branch (may prove, on inspection, to be all-weather) runs SE for about 10 miles to Basey on the south coast (See Route 3A).

From La Paz Route 1 runs northwards for about 17 miles. It is rated as a one-lane seasonal road, although several informants considered this section to be capable of supporting heavy MT in all weather.

At Calbiga, an unconfirmed branch is said to run SW for about two miles to Tinago, on the west coast. A vehicle ferry was used across Calbiga River.

Route 1 continues northwards for about 13 miles to Wright. This section is one-lane all-weather. Near Wright it links with Route 2 which runs east across the island.

Wright is an old coastal town with a small pier and several stone buildings. Mosquitoes are usually bad in this area.

From Wright to Catbalogan Route 1 runs westwards for about 12 miles, is one-lane all-weather with at least a 12ft wide well-beaten surface and 3ft shoulders. It frequently leaves the coast to wind in rolling country with frequent side-cuts. There is very little cover but bridge timber is said to be available within a mile or so at most streams. Bridges are of hardwood.

Catbalogan (11° 47' N, 124° 53' E) is the capital of Samar. It is a municipal port with an L-shaped rock pier. There are many modern buildings with streets of around 30 blocks. The town is cupped in hills over which Route 1 descends from the east.

The Catbalogan-Oquendo section of Route 1 is about 55 miles. It follows an old, well-graded road bed and is one-lane all-weather throughout. It follows the coast NW for about six miles, then turns northwards on a steep rocky side-cut, said to be an excellent road block area.

At Gandara a low-lying river valley subject to flooding is reached. The river at this point is crossed by vehicle ferry. Route 1 turns westwards and winds between a low swampy area to the south and rolling hills to the north to the coast at Sta Margarita.

From Sta Margarita to the municipal port of Calbayog, is a stretch of five miles of excellent road. It follows a sandy beach fringed with coconuts spaced in 30ft rows where vehicles can drive off the road. There are occasional patches of swamp between the road and the hills inland.

West of Calbayog, Route 1 continues along the coast to the mouth of Jibatan River where it again turns northwards.

Near here an unconfirmed one-lane seasonal branch runs west for about 2½ miles to Tinambacan on the coast.

At Oquendo a one-lane seasonal branch road runs NW for about a mile thence, by what one informant considered to be a "jeepable" trail, upstream at least as far as Pilar.



From Oquendo, Route 1 is a recently-opened one-lane seasonal road for about 39 miles to Catarman on the north coast. In general, this section is said to traverse rolling, open grazing country with scattered patches of timber. No side-cuts or steep grades are recorded.

Catarman is a municipal port, airport and cadre and has some 100 good houses located on the left bank of Catarman River about a mile from its mouth. Route 3F runs east from the east bank of the river which is said to be crossed by vehicle ferry.

Route 1 runs westwards for about 25 miles to Lavezares. This section is one-lane all-weather on which passenger buses operated between ferry crossings. Wooden bridges have replaced several of the old ferry crossings, but there is still said to be no bridge at Bobon.

No confirmation has been obtained concerning a branch road between Bani Channel and Route 1.

From Lavezares to Allen is an inland section of about five miles of one-lane all-weather road running SW.

At Allen on the NW coast, Route 1 turns to a one-lane seasonal road SE along the coast for about five miles to Mauo, at the mouth of Mauo River.

#### **b. Route 2 (Samar):**

Route 2 links the west to the east coast from a road junction on Route 1 near Wright ( $11^{\circ} 46' N$ ,  $125^{\circ} 01' E$ ) to a road junction on Route 3D near Taft ( $11^{\circ} 54' N$ ,  $125^{\circ} 25' E$ ), a **total distance of about  $35\frac{1}{2}$  miles.**

For the first  $2\frac{1}{2}$  miles on the western end Route 2 is one-lane all-weather, the remainder being one-lane seasonal. All bridges were said to be wood, good for 10-ton loads.

Route 2 first runs eastwards through rice paddies with *abaca* on the slopes to the north. It then turns NE and climbs gently to the small marketing barrio of Loquilocon. It then turns east along the crest of a ridge with patches of forest for about  $3\frac{3}{4}$  miles, then winds and continues to climb into a heavily forested area near the centre of the island.

There are said to be many good road block areas at side-cuts. Landslides were frequent during construction and considerable maintenance is still necessary.

Upon reaching Tubig River, Route 2 turns northwards and runs down the valley through rice paddies, with heavy forest nearby to the north.

Route 2 reaches Route 3D just north of Tubig River ferry crossing.

#### **c. Route 3 (Samar):**

Route 3 is planned for a coastal road along the south, east, and NE coast of the island. At present it consists of six detached sections, which, for the purpose of this study, are designated 3A, 3B, 3C, 3D, 3E and 3F, beginning at the SW corner.

##### **ROUTE 3A (Samar):**

From Basey ( $11^{\circ} 17' N$ ,  $125^{\circ} 04' E$ ) near the mouth of Basey River, a one-lane all-weather road runs westwards near the coast for about  $5\frac{1}{2}$  miles to the coast due west of S Antonio near the SE entrance to S Juanico Strait.

S Antonio had a landing berth for a vehicle ferry from Tacloban which took about 25 minutes to cross.

From Basey a one-lane seasonal branch road (may be all-weather) runs NW for about 10 miles to La Paz on the south end of Route 1.

##### **ROUTE 3B (Samar):**

From Balangiga ( $11^{\circ} 07' N$ ,  $125^{\circ} 23' E$ ), east of Balangiga River mouth, Route 3B runs eastwards, one-lane all-weather for about five miles to Giporlos, on Sua Bay.

An unconfirmed one-lane seasonal road is said to extend westwards from Balangiga for about  $6\frac{3}{4}$  miles to Lauaan and eastwards from Giporlos for about three miles.

##### **ROUTE 3C (Samar):**

From Guiuan ( $11^{\circ} 02' N$ ,  $125^{\circ} 43' E$ ), on the SE tip of Samar Island, Route 3C runs for about 23 miles NW to Calutan on Matarinao Bay.

Guiuan is a municipal port with a small concrete pier and said to have a total of about 200 houses.

Route 3C is one-lane, all-weather, for the first 11 miles to Salcedo. There is said to be a wooden bridge over a small bay with rocky side-cuts near Buabua. The remainder of Route 3C is one-lane seasonal.

A little more than six miles west of Salcedo a one-lane seasonal branch runs west, to the south of a steep ridge for about two miles to Sta Margarita on the south coast.



Route 3C turns NW to Naga on the south of Matarinao Bay. Originally there was a one-lane seasonal road over a very steep, rugged ridge to Sta Margarita. In 1939 this branch was very rough and has since probably become impassable. Route 3C continues westwards around the bay to Calutan.

#### ROUTE 3D (Samar):

From Vigan ( $11^{\circ} 17' N$ ,  $125^{\circ} 33' E$ ) Route 3D runs northwards along the east coast for about 92 miles to Oras Bay on the NE coast.

For the first 30 miles Route 3D is a one-lane seasonal road. At Llorente there is a flat sandy plain said to be about one mile square mostly under rice or camotes; excellent spring water is available here.

Llorente (Lanang) River is said to be crossed by ferry.

At Cabay Bay it skirts a sandy beach, and at Umawas, about 11 miles south of Borongan, it turns to one-lane all-weather.

Just west of Lalawigan Route 3 descends a steep side-cut, which may be a good road block area, to a sandy coastal plain said to be about three miles long by two miles inland, formed by three rivers emptying into Port Borongan. These are crossed by steel bridges on concrete piers. Between Bato and Loom Rivers Route 3 passes an airfield, large barracks and a branch road to a large pier about half a mile east.

The town of Borongan lies on the north side of the Loom River bridge, about half a mile inland. It has good streets around some 20 blocks, and many good buildings.

For the next  $15\frac{1}{2}$  miles northwards to S Julian, Route 3D is one-lane all-weather. Just north of the Borongan River bridge it climbs over some steep ridges, thence across a very swampy area with causeways and small wooden bridges at the head of Napla Bay, thence up several very steep side cuts south of S Saturnino. This is said to be a good road block area. The old road ended at S Julian, and a relatively new section of one-lane seasonal road runs around the shore of Port Libas, said to be through rice paddies. This section is about eight miles to Del Remedio (Remedios).

From Del Remedio to Sulat is about  $2\frac{1}{2}$  miles. This section is part of the old road northwards across country. It is one-lane all-weather, and is said to be in excellent condition.

A vehicle ferry was used across Sulat River.

Route 3D follows the coast most of the way for the next eight miles to Taft. The last  $2\frac{1}{2}$  miles is one-lane seasonal.

Taft is located on a 40ft-50ft elevation and Route 3D descends gently to the vehicle ferry crossing over Tubig River. On the north bank Route 3D climbs steeply. Both banks are wooded.

Route 3D runs northwards along the coast for a little more than 16 miles to Oras. This section is all one-lane seasonal.

Route 2 runs westwards across the island from a road junction near Tubig River.

The mouths of Ulut, Dolores and Oras Rivers are wide, and crossings are possible by boat only.

#### ROUTE 3E (Samar):

Commencing at Palapag ( $12^{\circ} 33' N$ ,  $125^{\circ} 7' E$ ), an inland town near the NE coast, Route 3E runs NW for slightly more than three miles to Pangpang, on the coast. This section is one-lane seasonal. A proposed extension of Route 3 runs from Calomotan to Laoang (about  $4\frac{1}{2}$  miles) on Laoang Island, but no confirmation of work done on this section has been obtained. It involves a boat crossing at each end.

#### ROUTE 3F (Samar):

Commencing at a ferry landing ( $12^{\circ} 34' N$ ,  $125^{\circ} 10' E$ ) on the north coast, Route 3F runs westwards for about  $30\frac{1}{2}$  miles along the north coast to Catarman where it joins Route 1.

The first 15 miles of this section is one-lane all-weather. At Pambuhan there was a passenger bus service depot. Wood bridges have now replaced most of the ferry crossings at the large rivers crossed by Route 3F, but a vehicle ferry is still said to be necessary across Pambuhan River.

From Bantayan to Maquiualo (about 10 miles) Route 3F is one-lane seasonal, turning again to one-lane all-weather for about the last  $5\frac{1}{2}$  miles to Catarman.

In 1929 there was said to be a wooden bridge across Catarman River, although like most bridges in this area it was liable to be washed out in times of flood. A vehicle ferry is said to be in operation at present.

Route 3F meets Route 1 at Catarman.



d. **Offlying Islands:**

There is no evidence of any road construction work having been started on the following islands:—

Almagro, Anahao, Anajao, Andis.

Bacan, Bacsal, Balinatio, Boloang, Batag, Batgongon, Binarayan, Boloang, Botic, Buad, Buri.

Cahayagan, Calicoan, Camandag, Canahauan Daco, Candolu, Capul, Caram.

Dalupiri, Destacado, Divinubo.

Guintarcan.

Hilaban, Homonhon, Jinamoc, Karikiki.

Laoang, Libucan, Libucan Gutia.

Macalayo, Manicani, Masingi, Montoconan, Minanut, Nabugtusan, Naranjo.

Parasan, Sto Nino, Suluan, Tagapula, Tangad Libucan, Timpasan, Tubabao.

3. "MILE BY MILE" DESCRIPTION:

**Route 1. (Samar):**

Comencing at La Paz (11° 24' N, 124° 59' E) on SE coast of Samar Island, Route 1 runs northwards near the west coast to Jibatan River mouth; thence inland to Catarman on the north coast; thence westwards to Mauo on the NW coast, a total distance of about 274 km (170.3 mi).

Approx Distance		South of Catbalogan (11° 47' N, 124° 53' E.)
km	mi	
67.0	41.6	LA PAZ (11° 24' N, 124° 59' E) on SW coast of Samar, vehicle ferry landing opposite Guintiguian, on NE tip of Leyte; about ¾ mile across S Juanico Str. Branch SE, 1-lane seasonal for about 16 km (9.9 mi) to Basey on South Coast (See Route 3A). Route 1 begins at La Paz, and runs north, 1-lane Seasonal through hilly country. (Drinking water may be scarce in dry season).
40.2	25.0	CALBIGA. Barrio of a few wood or nipa huts. Unconfirmed branch SW to km 43.0 (26.7 mi). Tinago, barrio on coast.
40.0	24.9	CALBIGA R vehicle ferry. River deep, current swift, banks fairly steep. From the east (right) bank of Calbiga R Route 1 turns to 1-lane all weather. Said to be a well beaten gravel surface about 9' wide, through open <i>cogon</i> grass country.
28.5	17.7	HINABANGAN.
31.0	19.3	Route 1 winds in hilly wooded country.
20.0	12.4	Route 1 descends to coastal plain.
19.0	11.8	Rd Jn branch east (right) is Route 2. Route 1 runs west along coast.
		WRIGHT: Municipality on coast in Maqueda Bay. Several stone buildings. Small wharf (mosquitos said to be very bad in this area).
		Route 1 runs westwards along coast. 1-lane all weather. It is an old, well beaten surfaced road about 12' wide with 3' shoulders. It climbs with easy grades through open <i>cogon</i> grass country, rugged hills to the North.
8.0	5.0	MAGBAG R. W.B.
		Route 1 winds frequently along summit of spurs with very little cover. Many side cuts. (Good road block and OP areas.) Many small WBs, 10' wide.
1.6	1.0	Route 1 descends on winding side cuts, with occasional patches of small trees, to a coastal plain about ½ a mile from coast east of Catbalogan.
0	0	CATBALOGAN. Capital of Samar and a municipal port. Located on a small coastal plain cupped by steep grassy hills. Good streets around 20 blocks. Route 1 enters from the East, turns past the capital buildings (left) to the wharf, which is L shaped, mostly rock fill at which inter-island steamers call. Many modern buildings of strong materials. Route 1 runs along coast.

Approx Distance		North of Catbalogan
km	mi	
1.6	1.0	CATBALOGAN R: Steel suspension bridge 110' x 10' x 15'. Unfordable. Banks steep and rocky. Tidal.
		Route 1 NW 1-lane all-weather said to be 12ft wide with 4ft shoulders. Well maintained and grades seldom exceed 6%.
		Runs between closely packed nipa huts each side for about a kilometer along the coast, then winds northwards on grassy foothills. Many side cuts.
8.0	5.0	SILANGA. Barrio. About 10 good houses on a sandy beach; surroundings forested hills. Many side cuts. Good ambush or road block areas.
10.0	6.2	Road block area. Route 1 leaves coast and runs north inland. Side cut on steep hill.
		Route 1 climbs into rugged, <i>cogon</i> grass-covered hills. Elevations often up to 300ft, with good view of ocean west.
41.0	25.5	Route 1 descends to low valley.
42.0	26.1	GANDARA. Municipality. Subject to flooding. (In July 1941 water reported to be 1ft over the road in the town.)
42.5	26.4	GANDARA R vehicle ferry. River wide and deep. Low banks.
		Route 1 turns SW and winds between hills on right and swampy Gandara R valley on left.
53.0	32.9	CONCEPCION. Barrio.
		Route 1 turns NW and skirts to the north of a wide swampy delta area.



62.0	38.5	STA MARGARITA: Municipality on coast. Route 1 runs close to a sandy beach, through a sandy coastal plain planted with coconuts in 30' rows. Vehicles can drive off road without difficulty. Several small WBs, but all easily detoured. Occasional patches of swamp land on inland side.
70.0	43.5	CALBAYOG. Municipality on coast. Some good houses and a church with strong walls. Good sandy beach with coastal plain extending about 5 miles north, mostly under coconuts, hemp or rice. Some swamps near hills beyond.
70.5	43.8	CALBAYOG R RC and steel bridge 115' long. Route 1 continues west along coast crossing small river on timber pile bridge.
77.0	47.9	Near mouth of Jitaban R. Route 1 turns north (right) up east (left) bank.
82.0	51.0	Rd Jn. Unconfirmed branch west across river to km 86.0 (53.4 mi) Tinambacan. Route 1 crosses small river on timber pile bridge. Route 1 continues North.
88.0	54.7	OQUENDO: Municipality. Municipio building may be of concrete. Unconfirmed branch NW 1-lane seasonal for about 1 km, thence by good foot trail (possibly "jeepable" part of the way) for 18 km (11.2 mi to Pilar). The old road ended at Oquendo. Route 1 continues NE, 1-lane all weather. Rolling country. Mostly <i>cogon</i> grass cattle country. Patches of forest.
94.0	58.4	Magubay barrio.
95.0	59.0	River. Small WB. Route 1 here turns to 1-lane seasonal. Winds in rolling country but no record of side cuts or good road block areas. Scattered patches of timber but mostly <i>cogon</i> grass.
151.0	93.8	CATARMAN: Municipality and municipal wharf about half a mile from north coast on west (left) bank of Catarman R. Said to have about 100 houses of strong materials. Unconfirmed ferry crossing to Route 3F which runs east. (There was a bridge here in 1929.) Route 1 turns west (left) past large school (right), barracks and airfield on north (right). 1-lane all weather. Said to be about 12' wide. Some built-up sections in swampy parts. Little cover. No large stream crossings.
161.0	100.1	BOBON: Municipality at mouth of a large river.
161.2	100.1	River. Ferry crossing. Route 1 continues west along north coast. No confirmed details of bridges, but many old vehicle ferry or canoe crossings have now been replaced by wood bridges. Passenger buses operate between ferry crossings. Value of this road for military vehicles is doubtful.
171.0	106.3	CARANGIAN. National port on north coast. Route 1 continues west 1-lane all weather, in rough terrain. Little cover. Across many small streams, the fordability of which is doubtful if bridges are out.
188.0	116.8	URDANETA. Barrio. Route 1 continues west. Many side cuts. Patches of forest (good road block areas). Coconuts along coastal sections.
191.0	118.7	LAVEZARES. Municipality on coast. Route 1 turns SW inland through rugged country.
199.0	123.7	ALLEN. Municipality on west coast near NW tip. Route 1 turns to 1-lane seasonal and runs SE along coast.
207.0	128.6	MAUO. Barrio on coast on north (right) bank of Mauo R said to be good harbor for small craft. 9' deep at LW for about 1 mile up stream. Route 1 ends here.

## Route 2. (Samar):

Route 2 links the west to the east coast from a road junction on Route 1 near Wright (11° 46' N, 125° 01' E) to a road junction on Route 3D near Taft (11° 54' N, 125° 25' E), a total distance of about 57 km (35.4 miles).

(Japanese are said to be hauling rice by truck over this route from the Ulut River area to Catbalogan.)

Approx Distance		East of Catbalogan
km	mi	
20.0	12.4	Rd Jn on Route 1 about one km east of Wright. Route 2 runs east. 1-lane, all-weather. Said to be at least 12' wide, with well-made hard surface carrying regular passenger buses. Bridges of wood, 10' wide and said to be good for 10-ton loads. Through ricefields near road, with brown clay loam soil. <i>Abaca</i> on slopes. Patches heavy forest higher up to the north.
25.0	15.5	Route 2 turns NE, and climbs gently.
31.0	19.3	LOQUILOCON. Small marketing barrio. Route 2 turns east, along crest of a ridge. Patches of forest.
32.0	19.9	Route 2 here turns to 1-lane seasonal. (Fairly new.) It winds and climbs into heavy forest. Many small permanent streams with small hardwood bridges. Many side cuts subject to land slides in wet weather. Gave much trouble while under construction and will require considerable maintenance. Many good road blocks and ambush areas.
47.0	29.2	BAGACAY. Barrio with foot trail south to Concord.
57.0	35.4	Route 2 winds down north (left) bank of Tubig River. NE. Mostly through rice fields, but heavy forest nearby.
77.0	47.9	Rd Jn on Route 3, north of vehicle ferry crossing over Tubig River mouth to Taft on east coast. Route 2 ends at this Rd Jn.



### ROUTE 3 (SAMAR):

Route 3 is planned for a coastal road along the south, east, and NE coast of the island. At present it consists of six detached sections, which, for the purpose of this report are designated 3A, 3B, 3C, 3D, 3E and 3F, beginning at the SW corner.

#### ROUTE 3A (SAMAR):

From Basey (11° 17' N, 125° 04' E) near the mouth of the Basey River, a one-lane all-weather road runs westwards near the coast for about 5½ miles to the coast due west of S Antonio near the SE entrance to S Juanica Strait.

S Antonio had a landing berth for vehicle ferry from Tacloban which took about 25 minutes to cross.

From Basey a 1-lane seasonal (may prove to be all-weather) branch road runs NW for about 16 km (10 mi) to La Paz on the south end of Route 1.

#### ROUTE 3B (SAMAR):

From Balangiga (11° 07' N, 125° 23' E) east of Balangiga R mouth, Route 3B runs eastwards, 1-lane all-weather for about 8 km (5 mi) to Giporlos, on Sua Bay.

An unconfirmed 1-lane seasonal road is said to extend westwards from Balangiga for about 11 km (6.8 mi) to Lauaan.

Also, some unconfirmed extension work done east from Giporlos for about 5 km (3.1 mi).

#### ROUTE 3C (SAMAR):

Commencing at Guiuan (11° 02' N, 125° 43' E) on the SE tip of Samar Island, Route 3C runs for about 37 km (23.0 mi) NW to Calutan on Matarinao Bay.

Approx Distance		North of Guiuan
km	mi	
0	0	GUIUAN, municipality and municipal port on SE tip of Samar. About 200 houses in all, probably 40 of strong materials. Concrete wharf. Route 3C runs NW 1-lane all-weather. Road of broken coral base and dirt surface. Flat country, through coconut plantations. Used by trucks and buses between Guiuan and Salcedo, for many years.
9.0	5.6	MERCEDES. Barrio inland. Hilly country on NE (right).
11.0	6.8	INLET. Said to be crossed by a WB. Tidal.
12.5	7.8	BUABUA. Barrio. Rocky area. Some side cuts. Said to be good road block area. Route 3C turns inland NW.
18.0	11.2	SALCEDO. Municipality. Route 3C here turns to one-lane seasonal. Said to be narrow (9') with many sharp turns, mostly along crest of rugged spur. Very little cover.
28.0	17.4	Rd Jn Branch west (left) said to be one-lane unsurfaced, along coastal strip to km 31.0 (19.3 mi) Sta Margarita, on south coast. From km 28.0 rd Jn Route 3C turns NW (right).
32.0	19.9	NAGA. Barrio on south coast of Matarinao Bay. Branch south (left) for about 4 km (2.5 mi) to Sta Margarita on south coast. This branch recorded as one-lane seasonal. It winds and climbs very steeply in very rough country. Very little cover. In 1939 it was said to be very rough and in bad repair. Very little cover. Route 3C turns west along coast.
37.0	23.0	CALUTAN. Barrio and municipal port on south coast of Matarinao Bay. Route 3C ends here.

#### ROUTE 3D (SAMAR):

From Vigan (11° 17' N, 125° 33' E) Route 3D runs northwards along the east coast for about 148 km (92 miles) to Oras Bay on the NE coast.

Approx Distance		South of Borongan
km	mi	
66.0	41.0	VIGAN (11° 17' N, 125° 33' E). Barrio about one mile inland from north shore of Matarinao Bay. Route 3D runs NE. One-lane seasonal. Said to be not over 9 feet wide, crushed coral and dirt surface. Small wood bridges 10' wide (capacity unknown).
62.0	38.5	S MIGUEL. Barrio on coast. Route 3D runs near coast.
56.0	34.8	HERNANI. Municipality on east coast. Route 3D turns north. Winding and one-way in places. Many small WB subject to washout in typhoon season.
39.0	24.2	LLORENTE. Municipality on coast, with about one mile square of flat sandy plain to west. Mostly under rice and camotes. Excellent spring water.
38.5	23.9	LLORENTE (LANANG) R. Said to be crossed by vehicle ferry. Route 3D continues north along coast. Winding and narrow in places. Old road ended here.
35.0	21.8	Route 3D turns west around Cabay Bay, usually about 100ft. from sandy beach. Vehicles can drive off road in places. (Some coconuts.)
39.5	24.5	CABAY R. WB. Route 3D turns NE near sandy beach.
36.5	22.68	S BUENAVENTURA. Barrio on coast. Route 3D leaves coast and runs northwards.
13.0	11.2	UMAWAS BARRIO. Route 3D here turns to one-lane all-weather.
16.0	9.9	SORIBAO R. WB. About half a mile up stream.
7.0	4.4	LALAWIGAN. Barrio on point south of Port Borongan. Route 3D turns west down a very steep side cut. Very little cover, but may be good road block area.



4.5	2.8	CABONG. Barrio on coast. Route 3D turn NW between coast and a coastal plain extending from $\frac{1}{2}$ to three miles west. Mostly rice or coconuts.
2.6	1.6	BATO R. SB. Unfordable. Said to be fresh water at bridge, 5ft. deep, two knot current. Banks sandy. Coconuts each bank.
2.5	1.5	BATO. Barrio of 20 nipa huts on north (left) bank. Route 3D continues north through planted coconuts.
1.7	1.1	Rd crossing. Branch east (right) one-lane all-weather about $\frac{1}{2}$ mile through coconuts, level, in centre of narrow peninsular to Borongan Wharf. (Part rock-fill.) Route 3D turns west (left) past Borongan A/F (south, left). Large barrack buildings north (right). Nipa huts clustered closely along each side. Coconuts.
0.5	0.3	LOOM R. Route 3D turns north (right) over a reinforced concrete slab and girder, 7-span bridge about 275 ft x 10 ft x 5 ft. Unfordable. Tidal, very little current. Banks low and muddy, occasionally overflows banks. Not fordable.
0	0	BORONGAN. Municipality and port. Town about $\frac{1}{2}$ mile west of beach. Stone Spanish fort near beach. Many buildings of strong materials. Streets around 20 blocks. Route 3D turns north. One-lane all-weather. Said to be about 15ft wide. Through coconuts on sandy coastal plain extending about two miles west.

Approx Distance		North of Borongan
km	mi	
2.0	1.2	SABANG. Small barrio.
2.1	1.3	BORONGAN R. Steel bridge said to be 299 ft x 16 ft x 30 ft on concrete piers. Unfordable. Tidal, said to be 5ft deep l.w. at bridge. Current about four knots at ebb tide.
3.5	2.2	GENDANG BARRIO. Here Route 3 winds east of a steep hill then turns NW and climbs about 10% grade. Many side cuts in red clay soil. This section often only 9ft wide in cuts in 1938. May since have been widened.
6.0	3.7	Creek. Small WB.
9.0	5.6	Route 3D descends to a swampy area extending about a mile west.
10.0	6.2	LOSUNGAN R. Rock-fill approaches and over a small WB.
10.3	6.4	BLACDAS R. Rock-fill approaches and over a small WB.
12.0	7.5	River. Rock-fill approaches and over a small WB.
12.2	7.6	Road block area: Route 3D turns NE on a steep rocky side cut with many large fig trees on uphill side. Route 3D descends over a spur to
14.0	8.7	S SATURNINO. Barrio on coast. Route 3D continues NE, level and swampy surroundings.
16.0	9.9	STA FE. Barrio said to be $\frac{1}{2}$ mile inland with foot trails only to Canjaway on coast. Route 3 continues north. Level. Through coconuts.
18.0	11.2	BUGAS R. Small WB. Not fordable. Tidal. Route 3 again winds and climbs slightly with small side cuts.
20.5	12.7	BUGAS. Barrio of about 50 nipa huts.
23.0	14.3	PAGBABANGNAN. Small WB over creek. Swampy, then level through coconuts to
25.0	15.5	S JULIAN. Municipality of about 200 nipa houses (a few wood buildings) on south coast of Port Libas. Old road ended here. Route 3D turns to one-lane seasonal. Winds westwards around shore of Port Libas. Big rice-growing area west.
38.0	23.6	DEL REMEDIO (Remedios). Barrio on north coast of Port Libas. Route 3D here turns to one-lane all-weather (old road) runs north. Level, through coconuts.
42.0	26.1	SULAT. Municipality.
42.1	26.2	SULAT R. Said to be crossed by vehicle ferry. Route 3D winds northwards along coast over several small WBs said to be intact.
51.0	31.7	MANTANG. Route 3D turns to one-lane seasonal.
55.0	34.2	TAFT. Municipality on a plateau elevation 40-50ft. Route 3 descends gently to
55.3	34.4	TUBIG R. Vehicle ferry crossing. North bank rises steeply to about 40ft elev. Both banks wooded.
57.0	35.4	Rd Jn Branch west (left) is Route 2. (77.0 km 47.9 mi from Catbalogan.) Route 3D continues north, winding along near coast. Through small coastal barrios and over several small WBs. One-lane seasonal.
60.0	37.3	ULUT R. Said to be crossed by passenger boats only.
65.5	40.7	DOLORES R. Said to be crossed by passenger boats only.
66.0	41.0	DOLORES. Municipality on north (left) bank of Dolores River mouth. Route 3D continues north, inland through hilly country.
76.0	47.2	ORAS BAY. Route 3D runs close to shore around Bay.
81.5	50.6	ORAS R. Crossed by passenger boats only.
82.0	51.0	ORAS. Municipality on north bank of Oras River mouth. Route 3D ends here.

#### ROUTE 3E (SAMAR):

Commencing at Palapag (12° 33' N, 125° 17' E), an inland town near the NE coast of Samar, Route 3E runs NW for about 5 km (3.1 mi) to Pangpang, on the coast. This section is one-lane seasonal.

A proposed extension of Route 3 runs from Calomotan to Laoang about 7 km (4.4 mi) on Laoang Island, but no confirmation of work done on this section has been obtained. It involves a boat crossing at each end.



### ROUTE 3F (SAMAR):

Commencing at a ferry landing (12° 34' N, 125° 10' E) on the north coast of Samar, Route 3F runs westwards for about 49 km (30.4 mi) along the north coast to Catarman where it joins Route 1.

Approx Distance		West of Laoang
km	mi	
200.0	124.3	Ferry landing (on Samar, south of Laoang which is a municipality and municipal port on Laoang I near mouth of Catubig R. Route 3F runs west along coast. One-lane all-weather. Said to be about 9ft wide, coral or gravel and clay surface, and ample shoulders enabling passenger buses to pass without great difficulty. Follows coast through coconuts.
198.0	123.0	Rd Jn. Unconfirmed branch south (left) about 18 km (11.2 mi) to Catubig. In 1941 work said to be in progress at both ends. Uncompleted section said to be "jeepable." Route 3F continues west.
189.0	117.4	PAMBUHAN. Municipality on east (right) bank of Pambuhan R mouth. Passenger bus service depot. Route 3F turns SW up river valley.
184.0	114.3	PAMBUHAN R. Said to have vehicle ferry crossing. Route 3F continues west. Several small WBs.
177.5	110.3	BANTAYAN R. Timber pile trestle bridge 155ft long, believed replaced in 1936 by a thru-riveted steel truss bridge 200 ft x 20 ft.
176.0	109.4	BANTAYAN. Barrio on coast. Here route 3F turns to one-lane seasonal. West on coast.
170.0	105.6	BUGKO RIVER. Timber truss bridge on R.C. piers and abutments, 240ft long replace old vehicle ferry.
165.2	102.7	MONDRAGON. Municipality on coast.
165.0	102.5	MONDRAGON R. Said to have a vehicle ferry crossing.
160.2	99.5	MAQUIUALO R. Said to have a vehicle ferry crossing.
160.0	99.4	MAQUIUALO. Barrio on coast. Route 3F here turns to one-lane all-weather. Continues west along coast over several small WBs.
151.5	94.1	CATARMAN R. Said to have vehicle ferry crossing. (Had a WB in 1929, but said to be washed out.)
151.0	93.8	CATARMAN. Municipality where Route 3F meets Route 1. Route 3F ends here.

□   □   □

## SECTION XIII—TRANSPORT

### 1. General:

Samar has no well organized transportation system. The principal means of transport were road and water routes. Several small bus operators and public utility cars carried passengers and freight over nearly all the road system. The Samar Land Transportation Company ran twelve, 26 passenger buses between Oquendo and Calbiga. The company has a total of 24 buses.

There is no barge commerce worthy of mention. Native sail boats and launches made trips along the coast where no highway existed. The coastal roads serving the central sections of the east and west coasts are connected across the island at the barrios Wright and Taft by a road which was completed in 1941. It took more than ten hours by truck from Catbalogan to Taft.

The numerous rivers are shallow and rocky, making water transportation difficult for any distance inland, although a few of the rivers are navigable for distances up to 32 miles by small motor boats.

Inter-island trade, like foreign trade, has been adversely affected since the Japanese occupation. Most of the small coastal and inter-island boats were destroyed or scuttled during the fighting in 1942. There is now very little commercial trade between islands.

### 2. Railways and Tramways. (Photos 9, 10).

There is no railway or tramway system on Samar with the exception of a narrow gauge (3ft 6in) local line at Pambuhan Sur operated by the Samar Mining Co for trucking iron ore from their mine to the loading wharf, a distance of about five miles. It is probable that this line has been removed since the Japanese occupation.

### 3. River and Coastal Vessels. (Photos 3, 7).

These consisted of diesel and kerosene launches of from two to 60 tons, some cargo carrying lighters and towing boats, a host of native *bancas* and *larchas*, and occasional inter-island steamers up to 1300 tons.

Following are some of the vessels berthed on Samar known to have been in use in 1941. It is not known whether the Japanese have confiscated all of them for



# ROADS MAP SAMAR SOUTHERN PART

Kilometers  
Statute Miles

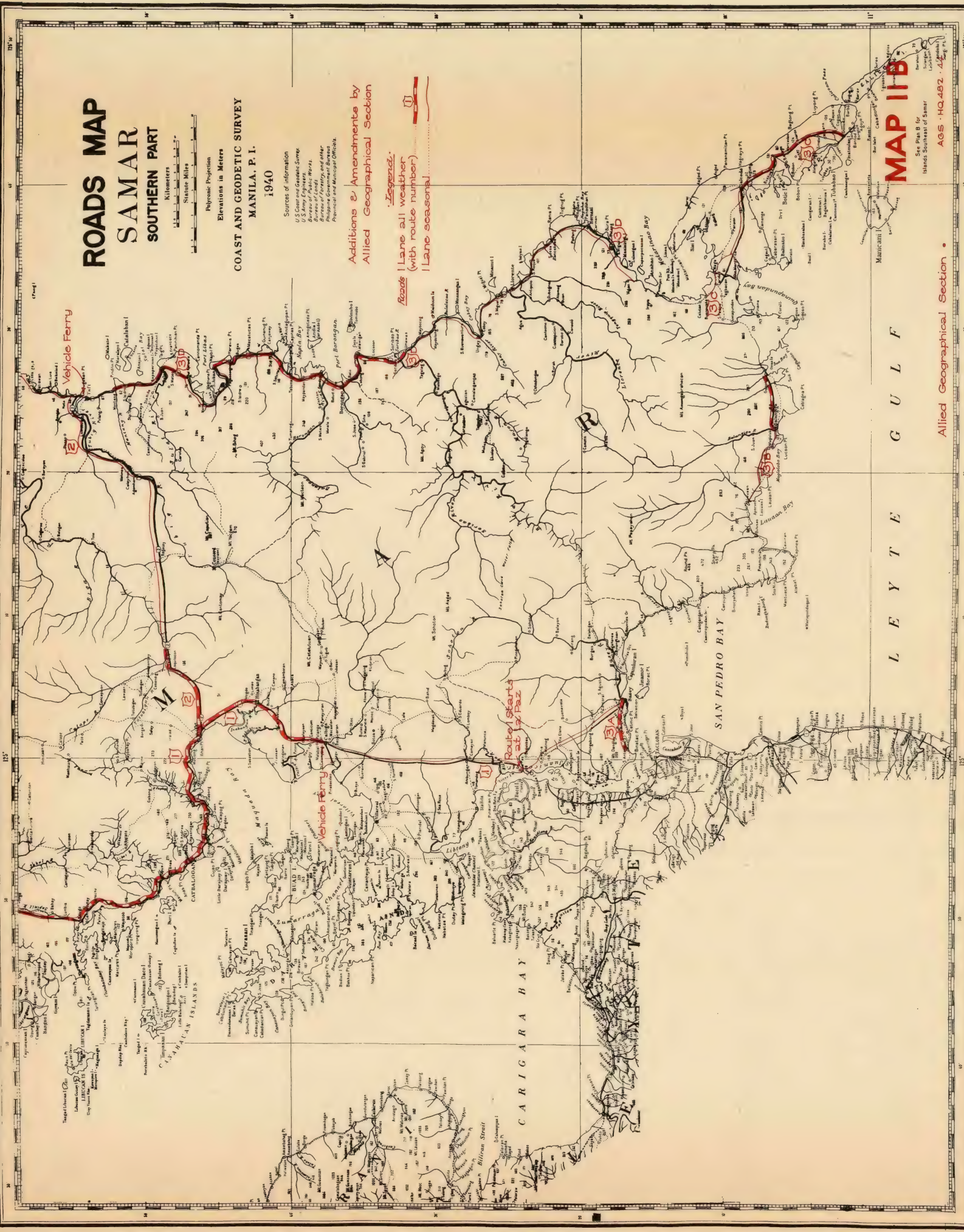
Polyconic Projection  
Elevations in Meters

COAST AND GEODETIC SURVEY  
MANILA, P. I.  
1940

Sources of Information  
U.S. Coast and Geodetic Survey  
U.S. Army Engineers  
Bureau of Public Works  
Bureau of Land  
Bureau of Forestry and other  
Federal and Provincial  
Provincial and Municipal Officials

Additions & Amendments by  
Allied Geographical Section

**Legend:**  
Roads | Lane all weather  
(with route number)  
| Lane seasonal



L E Y T E G U L F

MAP IIB

See Part B for  
Islands South of Samar  
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Allied Geographical Section



# ROADS MAP

## SAMAR

### SOUTHERN PART

## Polyconic Projection

## Elevations in Meters

# COAST AND GEODETIC SURVEY

MANILA, P. I.

0461

## Sources of information

U. S. Coast and Geodetic Survey.

U.S. Army Engineers.

Bureau of Public Works.

Bureau of Lands.

Bureau of Forestry, and other

Philippine Government Bureaus.

*Provincial and Municipal Officials.*

## Additions & Amendments by

## Allied Geographical Section

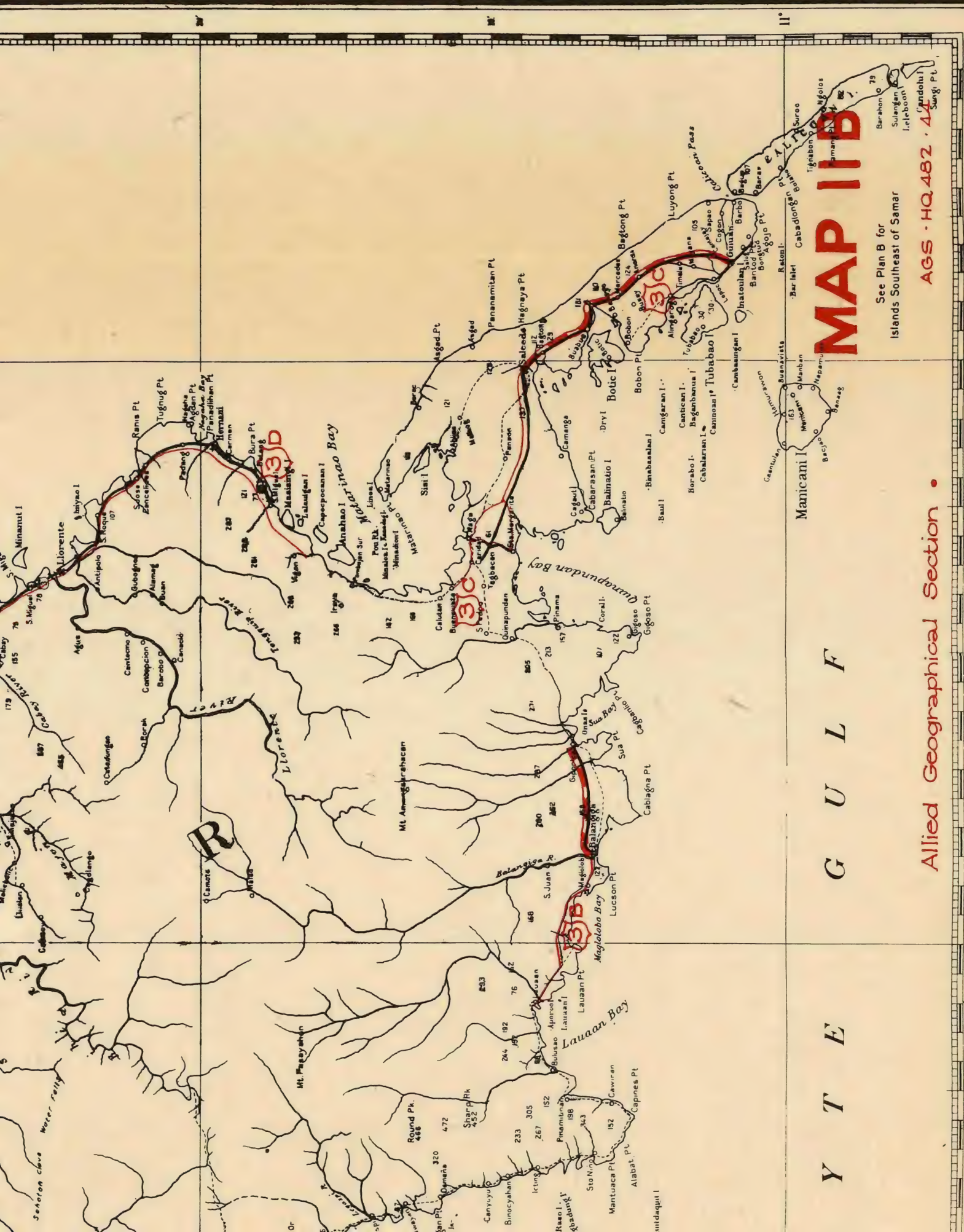
Legend.

!! Lane all weather  
(with route number).

Il Lane seasonal







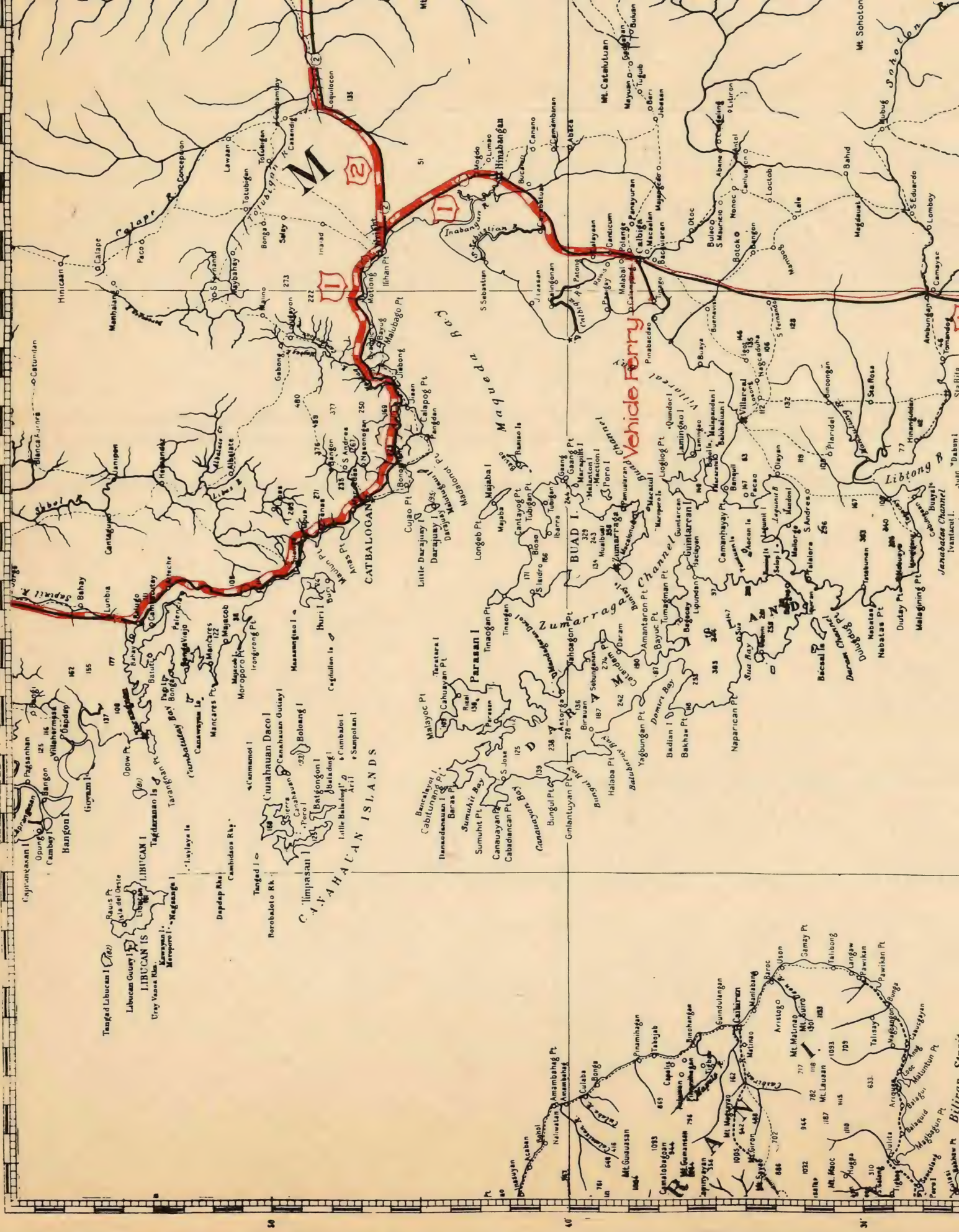
# MAP IIB

See Plan B for  
Islands Southeast of Samar

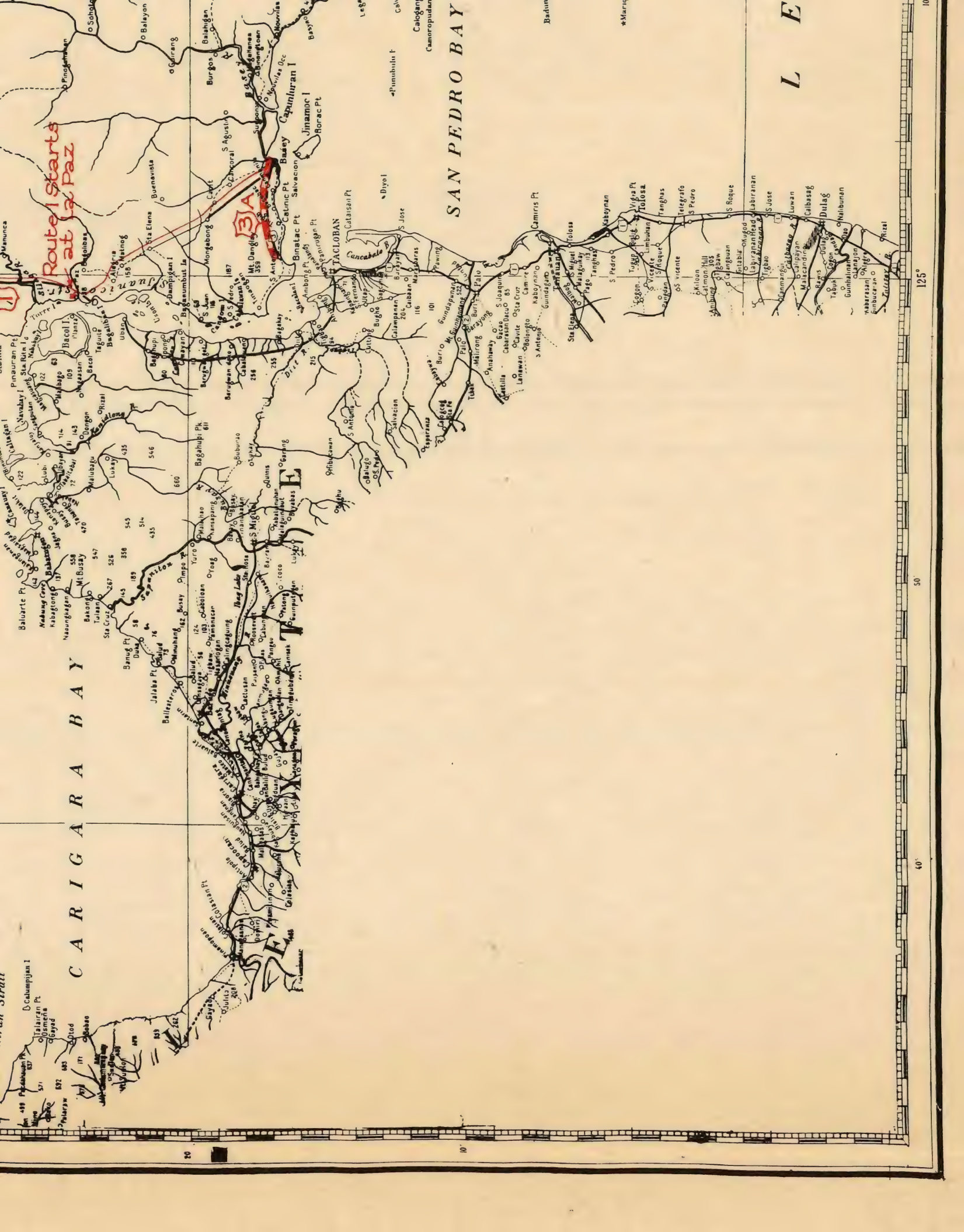
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Route 1 starts at La Paz

SAN PEDRO BAY

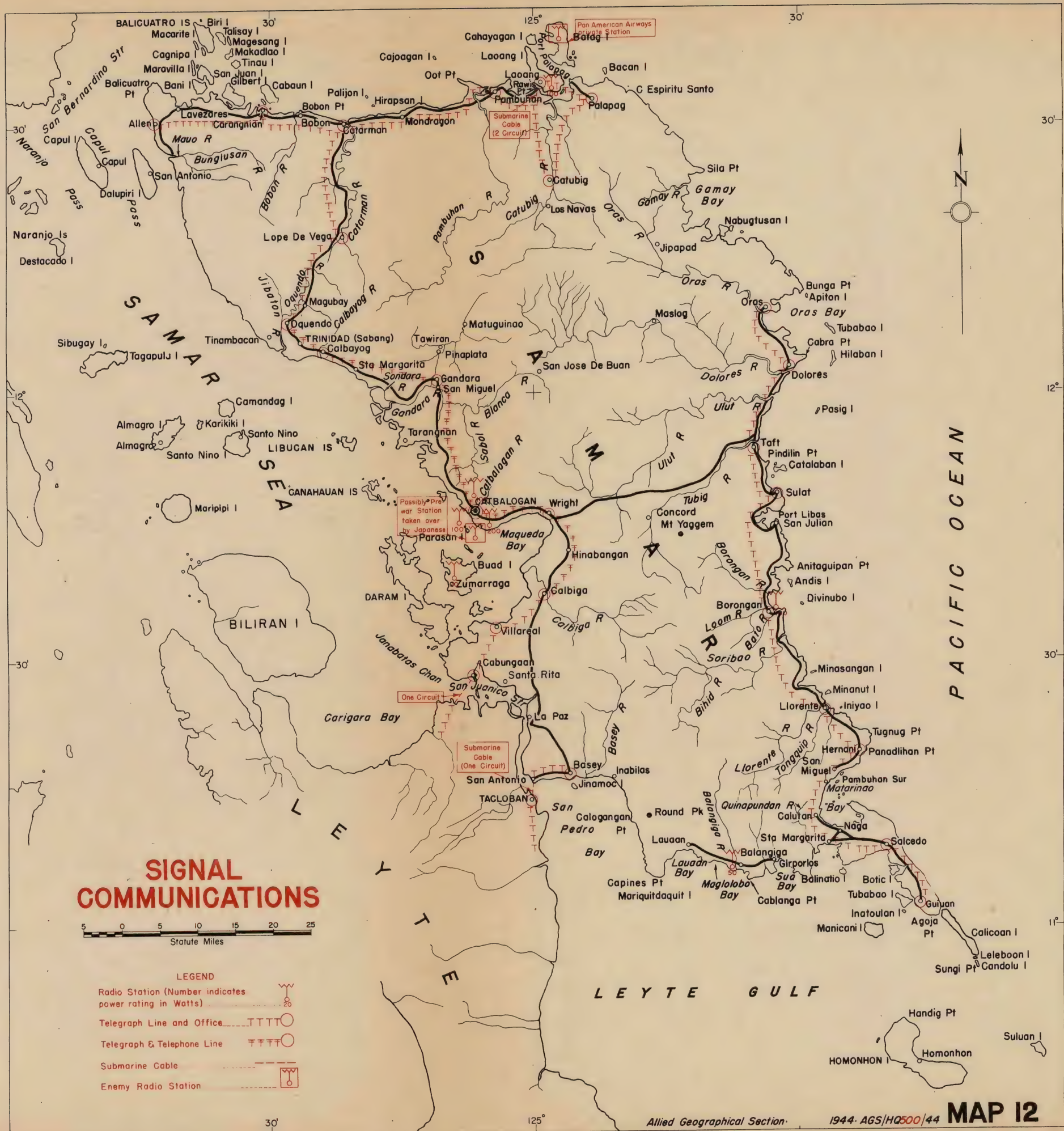
L E

125°

50

40°







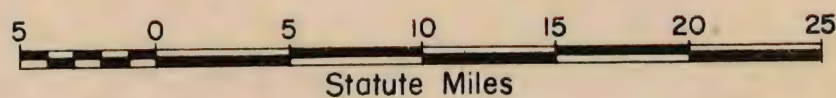








# SIGNAL COMMUNICATIONS

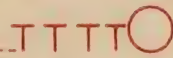


## LEGEND

Radio Station (Number indicates power rating in Watts)



Telegraph Line and Office



Telegraph & Telephone Line



Submarine Cable



Enemy Radio Station



30'

12







use elsewhere, but many of the vessels may be hidden out, up some of the rivers on the island.

Borongan—three diesel launches (3-5 tons)

Catbalogan—12 diesel and kerosene launches (2 to 60 tons)

Sabang—Eight diesel launches (up to 30 tons)

Two lighters (20 tons)

Laoang—Four diesel launches (2 to 20 tons)

Catarman—Two towing boats (2 or 3 tons).

Largest of the native boats are the *larchas*—seagoing vessels capable of inter-island trips. They were boats either with or without outriggers that carried considerable sail and had good speed for their size. They were used extensively in short coastal trips and for lightering out to larger vessels at anchor offshore. Dimensions of a *larcha*, or *bartil* as it was frequently called, are 20-30ft long, 6-8ft wide, capacity up to 10 tons.

The medium-sized native craft is called the *para* or *banca*. It was more or less similar to the *larcha*, although it was not built up as much on the sides and was shorter and narrower. Dimensions of these craft were 15ft-25ft long, three feet wide, three feet deep and had a capacity of about one ton. Because of their narrower beam and considerable sail area, they were even faster than the *larcha*. Most of these craft were used in coastal trade, although they also made inter-island trips.

A modified type of *para* without sails was used for tending fishing nets. These were rowed and frequently had as many as 12-15 men in a boat. The outriggers were left off these craft, a large section of bamboo being fastened along either side of the craft to help stabilize it.

Smallest of the native craft was the *barota*. These were dugouts, being little more than a hollowed-out log. They were always rowed or punted and were generally used in rivers and quiet waters. There was no outrigger, but often there were strips of bamboo around the gunwales to prevent tipping. These craft were 6-30ft long, two feet deep and 12-18 inches wide. These boats will take several men for short runs, but are not practical for extended trips.

The total number of *larchas*, *paraos* and *barotas* could not be estimated accurately since no registration of this type of craft was required. But this was the principal method of transportation for coastal natives and the number would be proportionately large, compared with other types of transportation.

#### 4. Vehicles:

Registered motor vehicles in Samar in 1940 numbered:

Automobiles	38;
Trucks and buses	130;
Motor cycles	6.

#### 5. Carts, Animals, Porters.

Used largely for road transport were the native wheeled carts and heavy wooden sleds, drawn by the native carabao. The carabao is a type of water buffalo indigenous to the Philippines. In 1939 there were some 68,000 of these animals on Samar, but it is reported that the Japanese have reduced this number largely by slaughtering for food purposes. The total number of horses in 1939 was 1,041.

No difficulty should be experienced in obtaining native porters along most of the populated parts of the coastal area. The Filipino is considered a willing worker, and generally is amenable and pro-American.

□   □   □

### SECTION XIV—SIGNAL COMMUNICATIONS

(See Map 12)

#### 1. General:

In 1940 the island of Samar was served by a communication system consisting of 26 telegraph offices, six radio stations, two inter-island submarine cables and 38 post offices. All of these services might be used in transmitting one message.

The entire communication system was controlled and operated by the Bureau of Posts under the Department of Public Works and communications.

There was also a private radio station owned by the Pan American Airways that was used to "beam in" and report weather conditions to their trans-Pacific "Clipper Ships." This station was located on Batag Island and is thought to be currently being used by the Japanese.

#### 2. Telegraph:

The Bureau of Posts Telegraph system maintained offices in most of the provincial coastal towns, the only inland area traversed was a connection from Oquendo to Catarman and one from Catubig to Laoang Island and Palapag. The over-all distance covered was over 300 miles.



The equipment utilized was all American and included simplex and duplex apparatus; pole fittings and wire also were almost entirely of American manufacture.

The pre-war service was reported to be efficient and adequate for the simple economic and social structure of the island.

**3. Cables and Telephone:**

Samar is connected to Leyte Island and to Laoang Island by the inter-island cable system.

The Samar-Leyte cable employs one circuit and is 1.8 miles in length.

The Samar-Laoang cable employs two circuits and is .9 miles in length.

The only information available on a telephone system in Samar is that a telephone line runs from Oquendo to Calbiga and passes through the various towns along Route 1.

**4. Postal Service:**

In June 1940 there were 38 post offices in operation, 26 of which operated telegraph services and five radio services.

Mail was carried under contract between the Commonwealth Government and carriers. In areas where there were no regular letter-carriers, the services of municipal clerks, telegraph messengers and others were utilized. The rural dweller calls for mail on trips to town, frequently bringing back mail for several neighbours as well as for himself.

Inter-island steamers, motor boats, launches and sail boats transported mail between the islands.

Letters and parcels could be registered, insured, or sent COD.

Samar was not included in any of the four Civil Airway routes of the Philippines. The nearest air mail post would have been Tacloban (Leyte) which was connected to Manila by the Philippine airline.

**5. Wireless Stations:**

In 1940 the Bureau of Posts operated six radio stations as enumerated in the table below. Apart from these, Pan-American Airways maintained one of their seven radio stations at Laoang in connection with the operation of their trans-Pacific service, and recent information confirms the establishment of two enemy radio stations on the island, located at Batag Island and Catbalogan.

*Bureau of Posts Radio Stations:*

<i>Town</i>	<i>Power Rating</i>	<i>Type of transmitter</i>
Balangiga .. . . .	50 watts	SW tube
Borongan .. . . .	100 "	SW "
Catbalogan .. . . .	200 "	RCA ET-3627 LW tube
" .. . . .	100 "	SW tube
" .. . . .	100 "	SW "
Zumarraga .. . . .	20 "	REL LW tube

*Pan-American Airways:*

Batag .. . . .	100 "	SW tube
----------------	-------	---------

The radio station at Zumarraga was on a fixed frequency and only communicated with Cebu.

**6. Other Means of Communication:**

Native sail boats and launches made trips along the coast where no highway existed.

Several inter-island vessels from Cebu made weekly trips along the coasts of Samar calling at nearly all important towns, while Catbalogan and Calbayog are on the route of the weekly Manila, Tacloban steamer route.

San Pedro Bay was crossed at all times of the year by *bancas* going between Samar and Leyte.



**SECTION XV—TOWNS AND BARRIOS (VILLAGES)**

**1. PRINCIPAL TOWNS:**

**i. Catbalogan—11° 47' N, 124° 53' E. (Map 12A; Photos 31-35):**

Catbalogan is the capital of the province of Samar, and stands at the head of a small bay at the mouth of Catbalogan River, on the west coast of Samar. It is the principal distributing centre for the island. Motor vessels run almost daily to Cebu and there was weekly steamship connection direct to Manila. Catbalogan contains a provincial hospital. Copra and hemp are the principal products of export.





- LEGEND
- 1 Church
  - 2 Church Bell Tower
  - 3 Suspension Bridge
  - 4 Cadre Barracks
  - 5 Provincial Capitol Bldg
  - 6 Provincial High School
  - 7 Ice Plant
  - 8 Chinese Merchants and Fish Drying Houses
  - 9 Concrete Wharf
  - 10 Navigational Light
  - 11 Water Pool

# TOWN PLAN OF CATBALOGAN (PROVINCIAL CAPITAL OF SAMAR)

Scale of Yards (Approx)  
100 50 0 100 200 300 350

From aerial photographs dated 1938 with additional information from informants.

Centre of town approx. 11° 46' N. - 124° 54' E.

## MAP 12A

A.G.S. HQ 52/44

21 Sep 44

Allied Geographical Section



The township is built on a small level area, only a few feet above sea level. It is enclosed on its north and south sides by wooded highlands with Catbalogan River emptying into the sea at its northern end. Behind the town lies an area of partly cultivated and partly grassland for 500-600 yards from the beach. Back of this is hilly terrain.

*Population:*

The municipality of Catbalogan has a population of 26,654, population of the *poblacion* being 8,159.

In 1939 there was one American resident in the town. Asiatics numbered 372 (all Chinese).

*Description:*

The town consists of about 15 or 20 square blocks of commercial and residential district.

There are several well-built wood and concrete homes and buildings but surrounding these are hundreds of nipa shacks.

An 800-900ft concrete pier had depths of 11-19ft of water alongside. Usually, however, launches and small boats transhipped cargoes to the pier or to the Chinese docks on Catbalogan River. There was also a breakwater at Catbalogan extending at right angles to the pier.

Catbalogan has the largest power station in Samar—a diesel plant with a 119 kw capacity which supplied 670 families.

A steel suspension bridge crosses Catbalogan River near its mouth, leading on to the coastal road north to Gandara. It is about 10 feet wide, allowing only one-lane traffic for automobiles.

A substantially-built stone and concrete church stands just back from the beach at the NW corner of the town.

Provincial capital building and provincial high school (see town plan) are also of stone and concrete. The cadre barracks are wooden. A small ice plant used to supply the town and some ice for shipment to neighbouring coastal towns. The plant had no cold storage facilities. There is a navigation light on the spit of land just north of the suspension bridge.

*Industries:*

There were no industries of commercial importance in Catbalogan. Maqueda Bay on which Catbalogan is situated is regarded as one of the best anchovy fishing areas in the Philippines, and although fishing was not highly developed as a commercial industry many natives were thus employed.

In 1940 a small lumber mill owned by Benjamin Bleibel, and known as the Bleibel sawmill, had an approximate daily capacity of 3,000 board feet per day.

*Water Supply:*

About 25% of the population of the town were served by a gravity water system with a daily capacity of 286,000 gallons. The large majority of the townspeople made use of surface wells, while a few artesian wells are reported.

A pipeline carries water to the pier, supplying fresh water for ships.

*Floods:*

The town, which is only a few feet above sea level, is often partly inundated during prolonged heavy rain. However, the water drains off rapidly.

*Port Facilities:*

See Section IV, Ports and Harbors.

*Communications:*

Catbalogan had road communication with Taft, on the east coast of Samar, and a coastal road along the west coast led to Basey, in the south; and through Gandara, Calbayog, Oquendo and Catarman in the north to Allen and Laoang. The Bureau of Posts operates three radio stations (see Sec XIV—Signal Communications) and there is telegraph communication to the larger Samar towns. The telephone line from Oquendo to Calbiga passes through Catbalogan.

**ii. Calbayog**—12° 4' N, 124° 36' E. (Photos 38, 39):

Calbayog is one of the largest towns on the west coast and lies on the eastern side of Calbayog River. It is a port-of-call for vessels from Manila and Cebu and is one of the principal copra and hemp shipping ports on the island.

The town is built on a level plain along the beach, immediately east of Calbayog River. The river, which is not very large, skirts the township on its western side and winds around in a northerly direction through mangrove swamp.



To the rear of the town are cultivated fields merging into an old, badly overgrown coconut plantation. This flat country extends up the river valley three or four miles. East of the town are cultivated fields.

*Table of Distances:*

Following is a table listing approximate distances from Calbayog, by air and sea routes, to important centres in the Philippines:—

	Air distance (nautical miles)	Steamer Routes (nautical miles)
Aparri .. .. .	395	465
Manila .. .. .	251	322
Legaspi .. .. .	78	104
Aroroy .. .. .	72	79
Tacloban (via San Juanico Bay) .. .. .	52	61
Cebu .. .. .	108	120
Iloilo .. .. .	140	150
Cagayan (Mindanao) .. .. .	205	226
Surigao .. .. .	140	159
Davao .. .. .	290	474
Zamboanga .. .. .	326	372
Jolo .. .. .	401	430
Mangarin Bay .. .. .	202	221
Puerto Princesa .. .. .	362	392

*Population:*

With a municipal population of 25,786, Calbayog has 3,563 people living in the *poblacion* area.

According to the 1939 Census, the only European in the town was one American. Asiatics numbered 141, all of whom were Chinese.

*Description:*

Buildings are near the beach. It has good, wide, well-surfaced streets through most of the township. The town is divided in two by a water drainage channel running east and west, entering the river through a built-up breakwater in which there is a narrow opening. The breakwater here is to prevent the river silt from filling up the channel. There are five or six bridges crossing this channel.

There were some strongly constructed warehouses along the beach that could be used for defence points. On the south side of the town near the beach there was a large church and convent of strong construction, with a wall around the yard. Most of the houses were of wood and nipa.

The school occupies a central position in the town and is adjacent to a vacant block of land with a running-track around it.

There was a small power company in Calbayog. This consisted of a diesel unit with a capacity of 45 kw. In 1939 electric light was installed in 170 houses in the town.

*Industries:*

Principal industries in this area were the production of copra, hemp, rice and fishing.

A lumber mill, operated by Matilde de Gomez and known as the Gomez saw-mill, had an approximate rated daily capacity of 2,000 board feet per day. It is reported that there were *two* sawmills in Calbayog, but no data of the second is available.

*Water:*

The town relied on surface wells and, to a lesser extent, on rain water. There was one artesian well. There is no developed pipe system in Calbayog.

*Floods:*

The drainage canal through the town, and the swamp area NE of it along the river, indicate that the area would be under water after heavy rain. However its proximity to the beach should provide good drainage..

*Communications:*

The main coastal road is practically on the beach and passes through the town. It crosses the river on a well-constructed steel and concrete bridge at the NE end of the town.

Calbayog had postal and telegraphic communication with the principal towns of Samar. There was no radio station. It is also on the route of the Oquendo-Calbiga telephone line. Vessels called regularly from Manila. Samar Land



Transportation Co in 1939 ran 12 26-passenger buses between Oquendo and Calbiga. A gravelled surface highway, 12 feet wide, extends between these two towns.

**iii. Zumarraga**—11° 38' N, 124° 51' E. (Photos 27, 28):

Zumarraga is the municipal seat of government for the Daram I group and is located on Buad I. The township is at the SW end of the island, and is sheltered by high hills. The valley north of Zumarraga is thickly overgrown with bamboo and dense tropical vegetation.

*Population:*

Municipality, 21,225; *Poblacion*, 2,782. Asiatic population comprised 30 Chinese. There was one American resident. With a few exceptions the inhabitants understood neither English nor Tagalog. Bisaya-Samar-Leyte is generally spoken.

*Description:*

Zumarraga had a radio station, landing pier and schools. It might also be developed as a good anchorage area for a light naval base.

The main street is paved for about half a mile with asphalt macadam to a width of nine feet. A partly paved road (water-bound macadam) extends across the isthmus at Zumarraga for 1,100 yards.

Following are the main buildings and structures:—

Fish storehouse, 75ft x 250ft;  
Church, 75ft x 200ft;  
Presidencia, 70ft x 70ft;  
Five small school buildings;  
Concrete cistern, 20ft diameter.

The beach front at Zumarraga is rocky. There is a solid masonry pier 20 feet wide, 520 feet long.

*Industries:*

Industries are mainly fishing and drying of fish for sale. Dried fish is shipped to Catbalogan and thence to Luzon.

*Water Supply:*

This consists of six shallow wells. A rain water cistern stored water from the roof of the municipal building. There are no rivers and only a few small streams in the valley north of Zumarraga. It is believed that they might not flow all the year. Generally speaking, adequate fresh water is lacking on the island.

*Communications:*

There is a radio station (KBZ, 63 meters, of fixed frequency) which is in communication with Cebu only. No telegraph. Small inter-island steamers used to travel between Catbalogan, Zumarraga and Tacloban (Leyte) daily.

Except for the paved roads and streets in the town, there are no roads in this area. There are foot trails between various inhabited points on the island.

**iv. Basey**—11° 17' N, 125° 4' E. (Photos 16, 18, 20):

The town of Basey, on the south coast of Samar, is situated at the mouth of Basey River at the head of San Pedro Bay. The Samar shore in this area is sparsely settled and there are few roads.

Innumerable fish traps obstruct the bay.

The town is built on the foreshore and is bounded on its eastern and southern sides by the waters of San Pedro Bay. An arm of Basey River winds around the north and NW extremities of the township.

The whole area is low-lying, and behind the town are areas of mangrove swamp.

*Population:*

Municipality, 28,296; *poblacion*, 4,473. Asiatics comprised 50 Chinese.

*Description:*

A substantially-built church stands in the foreground in the southern portion of the town. The school house and grounds are in the western section near a bend in the river.



Most of the houses were built of light material such as nipa and bamboo. There were eight or nine small jetties on the east shore where cargo and passengers were landed from ships anchored offshore. There were coconuts growing all along the beach west of the town.

*Industries:*

Basey is noted for its *Ticug Mat* (or Benig mat) production, large quantities of which were sold in Tacloban each year. Fishing and copra production were main occupations. There were no other industries of importance.

*Water Supply:*

There was no pipeline system. Surface wells were the main source of water supply. No artesian wells are reported.

*Communications etc:*

Basey was in communication with Tacloban (Leyte) by telegraph and submarine cable. The cable ran from San Antonio to Tacloban. It employed one circuit and was about two miles long.

A winding coastal road ran NW from the town to La Pas on the west coast where it connected up with the highway to Calbiga. From Basey to San Antonio a gravel highway about nine feet wide ran along the coast. There was no road communication to the east; travel in this direction was done by water transport.

The plain between Basey and San Antonio was covered with at least a foot of water during the rainy season.

**v. Borongan**—11° 36' N, 125° 26' E. (Photo 4):

Borongan, the most important town on the east coast of Samar, lies near the mouth of Loom River. The town is hidden from view by a coconut plantation which is planted right down to the beach.

SE of the town is the Borongan Airfield. It consists of one strip, NE/SW, 2,360ft x 198ft which is not currently operational.

Borongan is an important copra port.

*Population:*

Municipality, 21,340; *poblacion*, 2,853. In 1939 there was one American resident and 72 Chinese.

*Description:*

The buildings begin near the beach. The old Spanish stone or concrete church was visible from the bay. One hundred yards from the beach was a good-sized concrete store.

There was a substantial concrete pier, 328 feet long, 39 feet wide (at the end of a 784ft causeway), half a mile east of the town extending into 20 feet of water, partly protected by a breakwater and a small island. A road connects to the town.

Back of the bay NE of the town is a flat stretch of land about one mile wide by 1½ miles long. Much of it is planted in coconut trees and rice. Back of the plain are timbered hills 400-500ft high.

The main industry was copra production.

*Water:*

Surface wells were the main source of fresh water, although there was also a waterpipe system which supplied 136 families. No artesian wells are reported.

*Communications:*

There was a Bureau of Posts radio station in the town (power rating, 100 watts), telegraph communication with the main towns of Samar, and a monthly vessel from Manila. Foreign vessels called occasionally to load copra.

Borongan is on the main north-south coastal road. Connection by road to the west coast was made through Taft to Wright.

**vi. Catarman**—12° 30' N, 124° 38' E. (Photos 1, 2):

Catarman, on the north coast, is about five miles eastward of Bobon on the west bank of Catarman River. It lies about half a mile back from the beach and is nearly obscured by trees, only the roofs of the houses being visible. The town is inaccessible to larger ships because of offshore reefs and the shallow water at the mouth of Catarman River. Inter-island vessels anchored offshore and transhipped their cargoes on small launches upriver to the town.

North of the town and extending to the coast is Catarman airfield, built on sandy ground; one strip NE/SW, 2,760ft x 330ft. All weather.



### Population:

In 1939 the municipal population was 21,007, the *poblacion* 7019. There were five Americans. Asiatics numbered 166 Chinese.

### Description:

There are 250-300 houses, with a few two-storeyed structures. The military cadre is situated at the southern end of the airstrip and is a two-storeyed wooden building. On the north extremity of the township is the provincial school and sports ground. The church, a strongly-built structure, stands alone in a large allotment at the centre of the town.

A small diesel unit of 25 kw capacity served the town. There was electric light in 82 houses.

*Abaca* and copra production were the principal industries.

### Water:

The main water supply was provided by surface wells. A few houses had a pipeline system.

### Communications:

From Catarman, a road led south to Calbayog, west to Allen and east to Laoang. Vessels called weekly from Cebu. Bureau of Posts maintained a telegraph office which linked up with the principal towns of Samar.

The following is a list of all the municipal capitals in Samar Province, showing municipal and *poblacion* populations. (Figures according to 1939 Census):—

	POPULATION	
	Poblacion	Municipal
<i>North Coast—</i>		
Lavezares .. .. .	4,492	9,501
Bobon .. .. .	3,663	15,449
Catarman .. .. .	7,019	21,007
Mondragon .. .. .	2,645	7,369
Pambuhan .. .. .	2,191	14,864
Laoang (Laoang Island) .. .. .	4,782	19,736
Palapag .. .. .	3,986	19,745
Catubig .. .. .	1,876	18,763
<i>East Coast—</i>		
Jipapad .. .. .	808	1,347
Oras .. .. .	5,557	20,962
Dolores .. .. .	2,275	13,122
Taft .. .. .	1,521	5,743
Sulat .. .. .	2,612	8,004
San Julian .. .. .	1,854	5,880
Borongan .. .. .	2,853	21,340
Llorente .. .. .	2,664	11,570
Hernani .. .. .	968	9,405
<i>South Coast—</i>		
Guiuan .. .. .	4,076	23,110
Salcedo .. .. .	1,750	13,237
Balangiga .. .. .	3,546	19,858
Basey .. .. .	4,473	28,296
<i>West Coast—</i>		
Sta Rita .. .. .	2,134	9,949
Villareal .. .. .	2,888	13,807
Calbiga .. .. .	1,086	14,071
Zumarraga (Buad Island) .. .. .	2,782	21,225
Hinbangan .. .. .	1,096	2,001
Wright .. .. .	7,244	17,716
Catbalogan .. .. .	8,159	26,654
Tarangnan .. .. .	2,363	11,605
Sto Nino (Sto Nino Island) .. .. .	841	4,926
Almagro (Almagro Island) .. .. .	664	7,126
Gandara .. .. .	1,843	18,507
Sta Margarita .. .. .	2,058	9,331
Calbayog .. .. .	3,563	25,786
Oquendo .. .. .	2,376	14,379
Tinambacan .. .. .	2,802	9,788
Capul (Capul Island) .. .. .	4,190	7,488
San Antonio (Dalupiri Island) .. .. .	1,776	6,421
Allen .. .. .	3,142	14,734
<i>Inland—</i>		
Matuguinao .. .. .	573	896
Maslog .. .. .	402	769
San Jose de Buan .. .. .	357	633
Concord .. .. .	106	203



## SECTION XVI—RESOURCES AND REPAIR FACILITIES

(See Map 13)

### 1. General:

With the exception of a few lumber mills and mines there was no industry of any importance on Samar. About one quarter of the population was engaged in agriculture, but produced only enough foodstuffs for the local inhabitants.

The fishing industry was second only to agriculture in importance. Maqueda Bay is one of the most important fishing grounds in the Philippines, and compares with the famed fishing grounds of Japan.

The principal exports are copra and hemp. Basey and Sulat are centres of the famous *Ticug* (or *Benig mats*) mat production. The natives use these mats, spread on the floor of their huts, in lieu of a bed, rolling them up during the day time. Other than a machine shop for all equipment attached to the iron mine at Pambuhan Sur and facilities for minor repairs at the few lumber mills and bus depots, there were no repair facilities on the island.

### 2. Foodstuffs:

#### a. Groceries, cereals, vegetables, fruits etc:

Food products would be unavailable in quantity for troops. The areas of production are widely scattered. Rice and corn should be available in almost all parts of the island, but only small supplies could be expected in any given area. In 1940 production figures were: cleaned rice, 30,976 long tons; shelled corn, 2,661 long tons. No wheat is produced and all flour has to be imported. At certain times of the year there is a plentiful supply of bananas, mangoes and native oranges. Papayas are always obtainable.

Vegetable production was limited to local consumption but a wide variety can be grown.

Principal diet of the natives is fish, camotes and some rice.

On the east coast many coconuts are grown and copra is exported. About 10% of the crop is consumed locally.

#### b. Animals, poultry, eggs etc:

Fresh meat, with the exception of chicken and limited amounts of pork, is not readily obtainable. There are no meat-packing plants nor cold storage facilities on the island. Slaughtered animals are usually consumed locally. Fish, in quality and quantities suitable for troops, can ordinarily be obtained only near fishing ports (especially Maqueda Bay).

Not much use is made of milk products. Dairying has never thrived, because of lack of suitable fodder, and the general lack of native interest in milk products.

All canned goods were imported.

### 3. Forage:

More than two-thirds of the island is covered with forest and only a small portion along the coast is cultivated. There are a few scattered patches of natural forage along the west coast, but they are too limited in extent to be of any value. There is no storage of forage on the island.

### 4. Fuel:

Petrol, lubricants and diesel oil were imported for use in lumber mills, lighting etc.

In 1939 about 92,200 families, or 84% of the population, relied on petroleum for lighting purposes, while 11,795 used oil and native products. There are no commercial oil deposits in Samar. A coal mine in the centre of the island produces a small quantity of inferior grade coal.

There is unlimited supply of wood, and this, in conjunction with coconut oil and coconut husks, has been the principal fuel used since the Japanese occupation, due to a shortage of coal and petroleum. The latter is now imported for use of Japanese military only.

### 5. Construction Materials:

There is no shortage of construction material all along the coastline of Samar. Material available includes timber, coral, sand, nipa and bamboo. About 80% of the dwellings on the island are of light material such as nipa, bamboo etc. There are 43 concrete houses, and numerous stone churches and warehouses along the coast.























In 1940 six small lumber mills operating were:—

Name of Operators	Location	Approx rated daily capacity in Bd feet
1. Alipio Ponce de Leon (Ponce de Leon Bros. Sawmill).	Sabang, Calbayog.	2000
2. Matilde a de Gomez (Gomez Sawmill).	Calbayog.	2000
3. Eureka Sawmill & Co. Inc.	Oras.	1500
4. Benjamin Bleibel (Bleibel Sawmill).	Catbalogan.	3000
5. Angel C. Ong (Samar Lumber).	Giporlos.	2000
6. Felipe Abrigo (Bernado Sawmill).	Pototan, Salcedo.	2000

## 6. Water:

There is ample water from springs, wells and rivers for a large number of troops. Samar has a heavy rainfall evenly distributed. However, all water should be boiled or chemically treated, since even artesian wells are subject to seepage and pollution from insanitary surroundings and conditions which are favourable for bacterial development in the inhabited areas. Farther inland, where there is little or no habitation, the quality is much better, but precautions should still be taken. The natives are supplied by springs, wells and partially developed water systems.

The partially developed water systems are:—

Municipality	Population served	System	Capacity Gallons/day
Catbalogan .. .. .	2400	Gravity	286,000
Tarangnan .. .. .	850	"	31,680
Wright .. .. .	3000	"	108,000

The table below shows how water supplies on the island were utilized in 1939. The total number of families in that year was 108,669.

Water Pipe System	Artesian Wells	Surface Wells	Rain Water	Others
3,017 families	437 families	79,795 families	13,465 families	11,955 families

Fresh water is available to ships by pipeline at Catbalogan.

## 7. Minerals:

### General:

Iron is the only mineral of any importance found in Samar warranting commercial development. There are also small deposits of coal, manganese, chromite and sulphur. No gold or silver has been discovered.

Hot springs are found in a number of different places in the province, the most notable of which is one near Oquendo. This spring consists of a large pool of water almost boiling. The mineral composition of the spring is unknown, but it is said to have curative qualities.

In 1939 there were 1,296 people employed in mining and quarrying in Samar.

### a. Iron:

The only mineral development of any importance in Samar is an iron mine which was the second largest producer of iron ore in the Philippines and before the war was making regular shipments to Japan. This mine is located in the municipalities of Hernani and Balangiga, approximately five miles east of the barrio Pambuhan Sur, on Matarinao Bay. It was operated by the Samar Mining Co and in 1940 production was reported at 377,000 tons.

There is an ore-loading wharf, constructed of oregon pine, just south of Pambuhan Sur. The wharf extends from the iron ore stockpile to the loading station, a distance of 700-800 feet. The loading was done by belt conveyor. Loading rate was approximately 3,000 tons a day.

The housing capacity at the mine was approximately 2,000 men and these barracks were constructed of galvanized iron with wood framework. Power (alternating current) was supplied for the loading machinery at the wharf by the company's power house. There were two Worthington diesel engines of 300



horsepower each and a machine shop nearby for all equipment. At the mine there were also two Cummins 150 hp diesel generating units and three Cummins diesel locomotives.

*b. Coal:*

There is a small relatively unimportant coal mine in the centre of the island on Ulut River.

*c. Manganese:*

At barrio Jiabong, 12 kilometers south of Catbalogan, there is a small manganese mine. Production is reported as having been 1,200 tons in two months in 1940.

*d. Chromite:*

There is a chromite deposit on Homonhon Island and also in southern Samar near Guiuan. Small tonnages of good grade ore (47-54%) have been mined in both places, and both localities are considered to be potential sources of good chromite.

**8. Repair Facilities:**

Before the war the only established facility for repair of any consequence was the machine shop connected to the iron mine at Pambuhan Sur, but current Intelligence reports state that the Japanese have removed all equipment from the machine shop, and fittings from the loading wharf. Other than this there were only the bus and commercial garages, which handled minor repairs.

**9. Native Labor:**

For labor purposes there are about 110,000 male natives, between the ages of 15 and 45, mostly unskilled, available in Samar. The following table indicates the available skilled labour, according to the 1939 Census, in some of the more important trades:—

Saw and planing mills—		
Operatives and officials .. . . .		130
Labourers and others .. . . .		76
Electricians .. . . .		16
Blacksmiths .. . . .		107
Carpenters .. . . .		1,208
Plumbers .. . . .		3
Ship and boat manufacturers—		
Operatives and officials .. . . .		8
Labourers and others .. . . .		211
Telegraph and Radio—		
Operators and linesmen .. . . .		45
Road, bridge and street construction—		
Officials and foremen .. . . .		79
Labourers and others .. . . .		2,463
Clerical .. . . .		475

**10. Currencies, weights and measures:**

The centavo is the smallest unit of coinage. It is copper and worth half a US cent. There are 5, 10 and 20 centavo pieces all in silver. The next coin is a peso, in silver, worth 50 US cents. There are 1, 2, 5, 10, 20, 50, 100 and 500 peso paper notes.

Equivalents of Philippine weights and measures are:—

1 cavan palay (unhusked rice) .. . . .	43.00 kilos	94.77 pounds
1 cavan palay ( " " ) .. . . .		2.10 bushels
1 cavan cleaned rice .. . . .	57.5 "	126.73 pounds
1 cavan rice bran .. . . .	25.0 "	55.10 "
1 cavan corn on cob .. . . .	30.0 "	66.12 "
1 cavan shelled corn .. . . .	58.5 "	128.93 "
1 cavan mongos (dried beans) .. . . .	58.5 "	128.93 "
1 ganta palay (unhusked rice) .. . . .	1.7 "	3.7 "
1 ganta cleaned rice .. . . .	2.3 "	5.07 "
1 ganta shelled corn .. . . .	2.3 "	5.07 "
1 ganta shelled peanuts .. . . .	1.1 "	2.42 "
1 ganta mongos (dried beans) .. . . .	2.3 "	5.07 "
1 quintal tobacco .. . . .	46.0 "	101.38 "
1 pical sugar, copra, abaca .. . . .	63.25 "	139.40 "
1 bale abaca .. . . .	2.00 piculs	278.80 "
1 liter .. . . .	1.00 kilo	2.204 "
1 kilo .. . . .		2.204 "
1 meter .. . . .		39.37 inches
1 square meter .. . . .		1.196 sq yds
1 kilometer .. . . .		0.621 mile
1 square kilometer .. . . .		0.386 sq mile
1 hectare .. . . .		2.47 acres







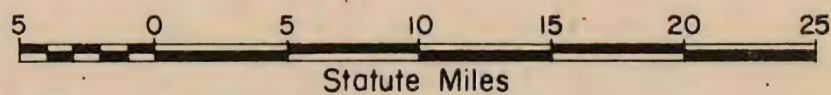








# POPULATION MAP



## LEGEND

Extent of populated area



Municipality (Figures indicate total population of municipality)



Figures from census of the Philippines 1939

30'

125'

BILIRAN I

DARAM I

Zumarraga  
21,225

Villarejo  
13,800

Cabungao  
San Juanico  
990

Carigara Bay

San Antonio  
TACLOBAN

Janabatas Chan







11. Power:

There are only four power companies on the island of Samar, as follows:—

<i>Location and Municipality served</i>	<i>Capacity in KW</i>	<i>Type</i>
Calbayog .. . . .	45 ..	Diesel
Catarman .. . . .	25 ..	"
Catbalogan .. . . .	119 ..	"
Guiuan .. . . .	45 ..	"

There are in addition, numerous small electric power units, privately owned and operated by small commercial concerns and individuals.

□      □      □

SECTION XVII—POPULATION

(See Map 14)

1. General:

The island of Samar is sparsely populated, the population being located, in the main, along a coastal fringe of cultivated land.

The 1939 Census of the Philippines gives the total population of Samar Province, which includes the offlying islands, as 546,306.

The Chinese constituted the bulk of non-Filipino stock, while there were a few American, Japanese and Spanish residents on the island.

The 1939 population of a few important towns was:—

	<i>Municipality</i>	<i>City or Town</i>
Basey .. . . .	28,296 ..	4,473
Borongan .. . . .	21,340 ..	2,853
Calbayog .. . . .	25,786 ..	3,563
Catbalogan (Capital) .. . . .	26,654 ..	8,159
Guinan .. . . .	23,110 ..	4,067
Zumarraga .. . . .	21,225 ..	2,782

2. Europeans:

There were 62 Europeans over the age of 10 years on the island. They comprised Spaniards (32), Americans (19), German (1), British (1), other countries (9).

a. Spanish:

Of the Spanish nationals, 13 belonged to the clergy, six were engaged in teaching, seven were in trading stores, one in mining and the remainder were housewives.

b. Americans:

Six of the Americans were associated with agriculture, seven were retired (occupations unknown) and the remainder were divided amongst mining, transport and trade.

c. Germans, British and other countries:

The one German on the island was a cigar and cigarette retail dealer. The Britisher was described as a dependant. Of the others, two were in trade, one mining, the rest either students, dependants, or in domestic duties.

3. Asiatics:

The Asiatic population of Samar in 1939 comprised Chinese (1,956) and Japanese (26). The Chinese controlled approximately 17% of the retail stores, and 33% of the employees in all retail stores were Chinese.

a. Chinese:

Over half of the Chinese population were engaged in retail trade of one sort or another. Of the remainder, 220 were housewives, servants or cooks, others being found scattered in various occupations such as bakeries, fish curing, boat manufacturing, agriculture etc.

b. Japanese:

The 26 Japanese (pre-war figures) were employed as follows:—Agriculture, seven; manufacturing, eight; trade, three; housewives, two; students, two; under age of 10, four.



#### 4. Natives:

##### a. General:

The 1939 Census places the Filipino population of Samar as 544,251. Their tribal classification is essentially Visayan and the Visayan dialect, which is the primary one spoken, is known as Samar-Leyte Bisayan.

Spanish Catholic influence dates back to 1768 and Catholicism is the predominant religion (521,348).

Agriculture and fishing are the main occupations, and while the people are generally friendly and pro-American, they are by nature independent and the Japanese would have difficulty in gaining their cooperation. In most of the island the natives live rather isolated lives.

##### b. Tribes:

The large majority of the coast people are native Visayans.

The Visayans constitute a majority of the inhabitants of the central and southern Philippine Islands and number about 7,000,000. In the past the natives have been friendly and tolerant of American and foreign influence.

Besides the Visayans, there is found on the north coast a large number of Bicolans and Tagalogs, and on the west coast, Visayans from Bohol, Cebu and Leyte.

##### c. Languages:

i. VISAYAN: Actually three dialects of Visayan are spoken in Samar. Most of the natives speak Samar-Leyte Bisaya (520,296). Bisaya-Cebuan (31,608) and Bisaya-Panay (462) are also spoken.

ii. TAGALOG: This is spoken by 9,788 natives mostly along the north coast of Samar. The Japanese have set Tagalog and Japanese as the official tongues in the Philippines. Choice of the former was no doubt due to the fact that in peace time Tagalog was spoken by about 25% of the Philippine population and was then the national language by presidential decree.

iii. ENGLISH AND SPANISH: Of the foreign languages in the Philippines, English predominates, and Spanish is next in importance. In Samar there were 108,918 English-speaking persons and 7,609 able to speak Spanish.

In government circles the official language was English and to a lesser degree Spanish. Before the Japanese occupation English was taught in schools.

iv. OTHER LANGUAGES OR DIALECTS: Bicol was spoken by 2,613 persons, mostly on the north coast; Chinese by 2,175; Iloko by 217; Kapul by 53 and other dialects by 212.

##### d. State of Civilization and Occupation:

The people of Samar are peaceable and respectful to higher authority. In 1940 there were two newspapers published. They contained little except local news, and were read by only 3% of the population. The natives generally are below the average of the Filipino people in education. Only 37% of the population over the age of 10 could read and write.

The table following shows the distribution of population in various occupations:—

Agriculture .. . . .	133,793
Domestic and personal service .. . . .	112,692
Professional .. . . .	1,673
Public Service .. . . .	732
Fishing .. . . .	6,290
Forestry and hunting .. . . .	860
Mining and quarrying .. . . .	1,296
Manufacturing and mechanical industries .. . . .	11,332
Transportation and communication .. . . .	3,500
Clerical .. . . .	475
Trade .. . . .	4,795

Women, excluding housewives, constitute about 10% of the workers in the various occupations on the island, most of them working on *palay* and coconut farms. Mat manufacture was almost entirely carried on by women. They constituted about a third of the population engaged in trade.



## SECTION XVIII : ADMINISTRATION

### 1. Before Enemy Occupation :

Philippine government before the war was highly centralized with practically all powers centred in the National government departments at Manila. The President of the Philippines exercised an all-embracing power over all executive departments, bureaus and offices and all provincial and municipal governments.

Local government consisted of 48 provinces and 12 chartered cities. The provinces, exclusive of the chartered cities within their boundaries, were divided into municipalities, these in turn into *poblacions* and several *barrios*. The poblacion itself consisted of two or more barrios.

The governing body of a province was the Provincial Board consisting of a provincial governor and two members elected by direct vote of the people. The Municipal Council was the legislative body in a municipality. It consisted of the municipal mayor, vice-mayor and councillors, whose number depended upon the class to which the municipality belonged. Like the provincial governor and the board members, the municipal officials were elected by direct vote of the qualified electors, and they held office for three years. The councillors were the various poblacion heads and the number of councillors depended on the number of poblacions in a municipality.

There were no chartered cities on Samar. Catbalogan was the provincial seat and the largest town in the province. In all there are 43 municipalities in Samar incorporating poblacions and barrios. The largest municipality in terms of population was Basey, the smallest, Concord.

### 2. Police Force :

Before the war, enforcement of laws and the preservation of public order was in the hands of the Philippine Constabulary, the municipal police and a few guards under the control of provincial authorities.

Detection and control of general lawlessness and crime rested mainly on the Constabulary which was organized along military lines into infantry companies equipped with a few trench mortars, hand grenades and individual weapons.

The Japanese are reported to have increased the size and authority of the Constabulary, but cooperation between it and the Japanese is reported to be not good and consequently its effectiveness has decreased. Its personnel report to the Japanese MP and persons taken into custody are dealt with by the Japanese.

### 3. Probable Administration by the Enemy :

The provincial government under Japanese occupation consists of the following:—

- a. Governor; Treasurer; Fiscal Officer.
- b. Provincial representatives consisting of Auditor; Engineer; District Health Officer; Superintendent of Schools; Senior Inspector of Constabulary.
- c. Head of Provincial Kalibapi.
- d. Provincial Representative in the National Assembly.

Municipal government consists of Mayors appointed in the following municipalities:—Amagro, Basey, Calbayog, Calbiga, Capul, Catbalogan, Ganadra, Oquendo, Sta Margarita, Sta Rita, Sto Nino, Tarangnan, Tinambacan, Villareal, Wright, Zumarraga.

In addition to governing through the old provincial organization, the Japanese and puppet authorities have set up larger overall governing jurisdictions. On 6 Feb 44 the President of the Republic appointed a Commissioner of the Visayas who has supervisory powers over local governments in the Visayan Provinces.

Governors of the provinces are now appointed by the President of the Republic where they were formerly elected by the people under the old Commonwealth Government. The Governor is the chief executive and administrative head of the province and his decision on administrative matters within the province is final.

The treasurer of the province is the chief financial officer and assessor. He answers directly to the Governor but has no say in administrative matters. He collects all taxes, fees and charges throughout the province, whether they are national, provincial or municipal and prepares such financial statements which may be required by the Governor.

The provincial fiscal is the law officer of the province and the legal adviser of the provincial government and its officers and of the mayors of the municipalities



in the province. He has no say in the administration of the province other than in an advisory capacity.

The Municipal Government consists of the mayor, the municipal treasurer, the municipal board and the barrio lieutenants. For first, second and third-class municipalities, there are four board members and two board members for fourth and fifth-class barrios. The barrio lieutenant is assigned duties by the mayor, but receives no compensation for his services.

The Japanese Military Administration is the liaison between the Japanese Army and the Philippine Executive Commission or civil government. The Japanese Military Police are responsible for dissemination of Japanese propaganda and collecting army intelligence and information.

The *Kalibapi* is the sole legal political party in the islands. It is also one of the principal agencies of propaganda for the puppet governments, taking the lead in pacification campaigns in the province and exercising a general supervisory influence over the work of the Neighbourhood Associations. All government officials are required to belong to the *Kalibapi*.

The Neighbourhood Associations are local organizations with a president designated by the mayor. Their purpose is to help in maintaining peace and order, assist the Constabulary, inform the proper authorities of any threats to public order, aid in the distribution of scarce commodities, take periodic family census, and many other sub-governmental duties.

Information regarding pre-war administration officials and probable sympathies of former residents are available to approved personnel on application to G-2, GHQ.

□   □   □

## SECTION XIX—MEDICAL PROBLEMS

### 1. General:

The climate is tropical. There is no dry season but there is a period of maximum rainfall in the winter especially along the eastern coast. Areas on the western side of Samar between Calbayog and Catbalogan have rainfall that is fairly evenly distributed throughout the year. Hence the coastal areas are humid and trying for Europeans, although the higher regions enjoy pleasant cool nights.

### 2. Diseases:

#### MALARIA:

Benign tertian, sub-tertian and quartan malaria occur in the proportions of 60%, 39%, and 1% of the total cases of malaria respectively.

The proportion of children in an area showing an enlarged spleen is a valuable index of the prevalence of malaria. The spleen index recorded for Allen (Samar) was 28% indicating a moderate incidence of malaria. This is, of course, only of one town on the island and cannot be considered as general for the province.

In general the rice fields and swamps of the Philippines are not considered to be dangerous malarial areas, but the foothill regions up to 2000ft do include the worst areas.

#### BLACKWATER FEVER:

Blackwater fever is an uncommon occurrence as it usually occurs in hyperendemic malarial areas.

#### TYPHUS:

Mite borne or endemic typhus is known to occur at times in the Philippines and mites which may carry it are widespread. It has not constituted a danger in the past but in view of the troops' experience in New Guinea care should still be exercised.

#### DENGUE:

Dengue fever is prevalent and two types of carrier mosquito are found *Aedes aegypti* and *Aedes albopictus*.

#### FILARIASIS:

Filarial disease is uncommon and cases of elephantiasis are rarely seen in this area.

#### DYSENTERY:

i. *Bacillary*: Enteric infections are common in the islands and of these infections bacillary dysentery is the commonest (90% of dysentery cases). In normal times the disease tends to be sporadic but following Japanese occupation the position is likely to be much worse, so all precautions should be taken by troops entering the area to ensure the sterilisation of water and protection of food from infection through flies, dust or any other source of contamination.



ii. *Amoebic*: Although troublesome and a more chronic infection than bacillary dysentery the amoebic form is not nearly so prevalent.

iii. *Balantidial*: Dysentery due to *Balantidium coli*, occurs but is of minor importance.

#### TYPHOID AND PARATYPHOID FEVERS:

Although present in normal times these enteric diseases are less common than dysentery. They appear to have spread under Japanese occupation.

#### CHOLERA:

**Cholera had not been recorded in the area for some years prior to the war but in view of the epidemic reported to have occurred in the Philippines in 1943 it will be necessary for all troops entering the area to maintain the highest practicable standards of hygiene including sterilisation of water, as protection against this and other bowel diseases.**

#### FOOD POISONING:

Outbreaks of food poisoning from determined causes occur from time to time. Common diarrhoea is widespread.

#### YAWS (FRAMBOESIA):

Yaws, a spirochaetal disease characterised by crusted sores in its secondary stage and having a number of syphilis-like manifestations in its late stages, is common as in other tropical areas but readily responds to injections of N.A.B.

#### FUNGUS INFECTIONS OF SKIN:

Scaly fungus infections of the skin such as *Tinea cruris* (Dhobie itch) and *Tinea imbricata* are common whilst seborrhoea and pityriasis are rife.

#### SCABIES:

Scabies or the itch, caused by an acarine mite, is so common that special facilities were set up by the Commonwealth to deal with it.

#### TROPICAL ULCER:

As in all humid tropical areas small scratches or abrasions are liable to rapidly develop into large spreading ulcers which are common among the natives, many occurring in children. In order to avoid their occurrence even trivial scratches should be treated with antiseptic and dressings.

#### MADURA FOOT:

This condition, in which the foot is swollen and discharges pus from sinuses for long periods, is due to a fungus infection. It is occasionally met with in farmers.

#### LEPROSY:

Leprosy is met with throughout the Philippines. Many of the cases are isolated.

#### VENEREAL DISEASE:

Gonorrhoea is widespread and is the most prevalent venereal disease although accurate statistics are difficult to obtain. Syphilis is less prevalent while chancreoid is uncommon; granuloma venereum and lymphogranuloma inguinale are unknown.

#### TUBERCULOSIS:

Tuberculosis is a common disease ranking as the greatest single cause of death in the group.

#### INFLUENZA:

Influenza is a common disease.

#### RESPIRATORY INFECTIONS:

Bronchitis, bronchopneumonia and lobar pneumonia are all common. In 1940 the combined annual rate for all respiratory infections in the Philippines Department of the U.S. Army was 161.8 per 1000, these diseases coming first on the list of causes for hospital admission.

#### WORM DISEASES:

There are a great number of worm infestations which occur but many are rarely met with. The following are of importance:—

i. Hookworm infestation is widespread *Ankylostoma duodenale*, *A. Braziliense* and *Necator americanus* all occur.



ii. Large numbers of the population harbor *Ascaris lumbricoides* (round worms) and *Trichuris trichiura*.

iii. Tape worms are common and include *Taenia saginata* and *Taenia solium*. Other types of tape worm are much less common.

iv. Schistosomiasis occurs in Leyte, Samar and northern Mindanao but not elsewhere in the Philippines. The form met with is *Schistosoma japonicum* and the intermediate host is a freshwater snail *Blanfordia quadrasi*. It is inadvisable to swim in freshwater in infected areas.

v. Rarer types of worm infestation include *Paragonimus westermanii* and *P. ringeri*, *Fasciolopsis buskii*, etc.

#### SMALLPOX:

No smallpox outbreaks have been reported in recent years. Many of the natives had been vaccinated.

#### PLAGUE:

No plague cases had occurred for a long time prior to Japanese occupation but there is always a possibility of introduction from infected ports since then.

#### RABIES:

Rabies or hydrophobia occurred from time to time. This disease can be transmitted to men from affected dogs and some other types of animal.

#### MALNUTRITION AND DEFICIENCY DISEASE:

Malnutrition is prevalent, due largely to ignorance of proper foods and poverty. Cases of beri beri still occurred despite public health efforts to improve the position.

### 3. Hospitals:

Only one hospital was known to exist on Samar before Japanese occupation. This was the private hospital of the Samar Iron Mining Co. It was a modern, well-equipped small hospital with an operating room, dispensary, large ward and four private rooms. It was for the use of the mine personnel and their families.

### 4. Pests and Dangerous Animals:

#### MOSQUITOES:

Various vector mosquitoes have been noted under the heading of Diseases. In addition there are a number of pest mosquitoes.

#### FLIES:

Common flies are numerous and assist to maintain the prevalence of enteric disease.

#### MITES:

Itch mites of the genus *Trombidium* (allied to the "bush mokka" of New Guinea) occur.

#### SPIDERS:

The red back spider, *Latrodectus hasselti*, related to the Black Widow spider of America, can cause dangerous symptoms by its bite.

#### LEECHES:

Terrestrial leeches are present.

#### SNAILS:

The snail, *Blanfordia quadrasi*, which lives in freshwater, is an intermediate host for *Schistosoma japonicum*, while snails of the genus *Melania* harbor an intermediate stage of the lung fluke, *Paragonimus westermanii*.

#### RATS:

Rats and their fleas are numerous enough to constitute a danger should plague be introduced.

#### SNAKES:

Several types of land and sea snakes have been reported but are not very numerous. They include Indian Coral snakes and the arrow headed rice leaf snake.

#### COCKROACHES:

Common cockroaches are everywhere and are a constant source of annoyance to the European and American inhabitants. Food must be kept well covered in metal, crockery, or bamboo containers.



**SECTION XX—CLIMATE AND METEOROLOGICAL CONDITIONS**

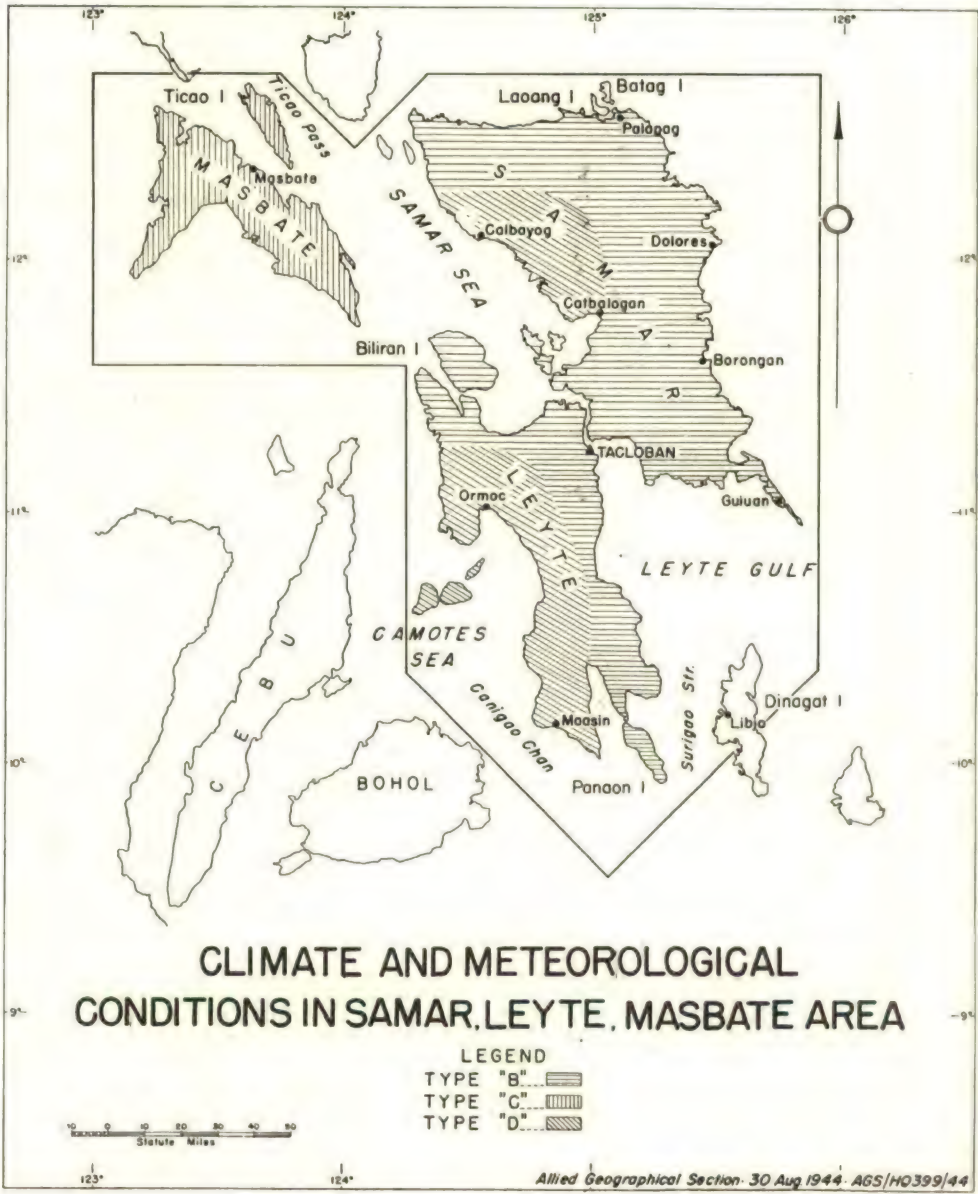
**1. Climatic Types:**

The Philippine Islands, in the southern half of which are Samar, Leyte and Masbate, extend over 13 degrees of latitude. Samar and Leyte each has an area of between 1,000 and 6,000 square miles, with mountain peaks in Samar rising to nearly 3,000 ft. The mountainous nature of the country has a considerable influence on local climatic conditions.

The differences in climate found in the Archipelago depend for the most part on the local air currents, which in turn are produced by the general air streams, the situation and nature of the islands and the most usual storm tracks.

The main air streams over the Philippines are:—

- a. The northers (sometimes referred to as the NE monsoon);
- b. The trades, coming from an easterly direction; and
- c. An equatorial current (sometimes called the SW monsoon).



These winds generally blow:—

- a. Between north and east (northers and trades) from October to January;
- b. From east to SE (trade wind) from February to April; and
- c. For the remainder of the year from southerly directions, mainly SW (SW monsoon and the influence of typhoon centres). Air currents from NW and west are generally of cyclonic origin.



Horizontal temperature differences are slight: on the contrary, rainfall differences are decidedly variant, due to the combined influence of topography and air stream direction. Rainfall incidence forms a basis of climate classification in the Philippines.

Four climatic types—A, B, C, D—may be identified in the Archipelago: of these types B, C, D are encountered in the region under discussion.

TYPE B: No dry season; very pronounced maximum rain period in winter (about Oct-Feb). This category includes almost all of Samar except the region around Calbayog and the eastern part of Leyte, regions sheltered neither from the northers and trades nor from the SW monsoon and cyclonic storms.

TYPE C: No very pronounced maximum rain period, with a short dry season lasting only from one to three months, generally between January and April. Masbate experiences this type of climate, typical of localities only partly sheltered from the northers and trade rains and open to the SW monsoon or at least to frequent cyclonic storms.

TYPE D: No dry season and no very pronounced maximum rain period. Western Leyte and that part of Samar not included in Type B are regions affected by this type. Both cyclonic and NE monsoon rains as well as thunderstorm rains are experienced in these regions.

Mountain climates might reasonably form another climatic type, but they can be reduced to some of the above, except that temperature decreases with altitude and rainfall generally increases with height.

## 2. Typhoons:

Typhoons (tropical cyclones) are really the only well-marked travelling cyclonic disturbances that affect the Philippines, though shallow, low pressure systems, which may or may not develop into typhoons, form at times in the vicinity of the Archipelago and give rise to squally winds and much rain.

Typhoons generally move from east to west, and in the neighbourhood of their centres are experienced continued gales and heavy squalls, torrential rains from widespread low cloud, and disturbed seas. Over the southern section of the region under discussion (i.e. between Lat.  $8^{\circ}$  N, and Lat.  $11^{\circ}$  N) typhoons are slightly more frequent than farther south—about 7 per cent of the more serious typhoons which affect the Archipelago are experienced. From  $11^{\circ}$  N, to  $13^{\circ} 30'$  N, typhoons are frequent and destructive—the area experiences 19 per cent of all typhoons. (In a normal year 13 typhoons are experienced in the area  $0^{\circ}$ - $20^{\circ}$  N,  $120^{\circ}$ - $130^{\circ}$  E, but about 50 per cent of these storms commence to recurve to the north and NE before reaching the Archipelago.)

The mean track of typhoons moves progressively north from February until the middle of August and then south again until January, resulting in the west-moving typhoons of winter and spring (Dec to May) generally striking the Archipelago south of  $15^{\circ}$  N. In fact, from January to March that part of the Archipelago which lies north of  $11^{\circ}$  N, is almost, if not completely, immune from typhoons.

## 3. Wind:

The winter, or NE monsoon, generally sets in during November and continues till March or even April. The direction of the monsoon is mainly between north and NE, tending more easterly toward the end of the season. When it is best developed—in January—it blows with remarkable steadiness, speed averaging 15-20 mph. Stronger winds are almost always produced with rising pressures; such conditions are of short duration, and become less frequent as the NE monsoon draws to a close. Interruptions of the monsoon are more frequent in the south than in the north, being associated with typhoons or shallow low pressure systems.

The summer, or SW monsoon, following a transition period of variable winds and calms, prevails from June till September or October, and is steadiest in July and August. Winds generally blow from the westerly quarter during this monsoon and are less steady than in the NE monsoon. The uninterrupted wind stream averages 10-15 mph at its height. A further change-over period to the NE monsoon follows that of the summer monsoon.

Squalls are prevalent during the SW monsoon season, particularly near the land, and during such squalls the wind may reach gale force in gusts. These squalls are often associated with thunderstorms.



Strong and squally SW or westerly winds, locally called *collas*, sometimes blow for several consecutive days in summer and early autumn, even later in the south. They are generally associated with typhoons centred some distance northward, and sometimes in the south with shallow depressions. Much accompanying rain is a general feature of *collas*.

Land and sea breeze effect is well-marked in coastal waters, and particularly so when and where the prevailing monsoon is weak.

Topography, however, may modify the prevailing wind; details of conditions at Calbayog, Laoang, Masbate and Tacloban are given in the table below.

Station		Jan.	Feb.	Mar.	Apr.	May	Jun	Jul	Aug.	Sep.	Oct.	Nov.	Dec.
CALBAYOG	Direction	NE	N	NNE	NE	NNE	N	N	SW	W	N	N	N
	Speed (mph)	7	7	6	6	7	10	7	8	9	9	6	6
LAOANG	Direction	NE	NE	NE	NE	NE	SW	NE	SW	SW	WSW	NE	NE
	Speed (mph)	13	13	13	13	14	14	14	14	14	14	14	13
MASBATE	Direction	NE	NE	E	E	E	SW	SW	SW	SW	SW	N	NE
	Speed (mph)	9	10	9	9	10	10	10	14	13	13	9	9
TACLOBAN	Direction	NW	NW	NW	SE	SE	NW	W	W	W	NW	NW	NW
	Speed (mph)	10	9	8	9	7	8	10	10	9	8	9	8

At Batag, situated at the eastern entrance to San Bernardino Strait, the flow of air is brisk and calms are very few. Easterly winds (NE to SE) blow for almost two-thirds of the year and westerly winds (SW to NW) only for a quarter of the year. The easterlies reign supreme from October to March with a maximum in January: the westerly winds blow most frequently during the typhoon season, from July to September. However, in no month do the easterly winds completely disappear—they blow on more than 80 per cent of April days and never on less than 10 per cent of days in other months.

Batag, and indeed the northern coast of Samar, are exposed to the full force of the NE monsoon which blows at times with gale force and is accompanied by blinding rains.

At Guiuan, easterly winds are the most frequent; winds from north and NE are almost twice as frequent as those from south and SW. From November to April, whenever calm conditions do not prevail, winds blow from easterly points at least 50 per cent of the time. During the height of the NE monsoon (January to March) easterly winds are present on more than 80 per cent of days. The south-westerlies, however, even at their peak (July to September) do not attain the maximum frequencies of the easterlies during the NE monsoon. While, during the NE monsoon, NW winds may disappear, in no month do the easterlies fail to blow.

4. Rain:

The main types of rainfall, based on the presence or absence of a dry season and of a maximum of rainfall in the winter, have been outlined in paragraph 1. Rainfall data, monthly and annual averages in min. (25.4 min = 1 inch) are given below. Instances of each type encountered in the region are included.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
TYPE B—													
Guiuan ..	535	342	286	200	211	213	177	125	170	277	446	504	3486
Tacloban ..	337	217	171	137	156	183	165	139	155	214	302	372	2548
Borongan ..	642	439	327	262	245	236	189	144	182	331	539	643	4179
Laoang ..	409	358	304	162	157	158	221	143	257	353	550	629	3701
TYPE C—													
Masbate ..	183	123	75	37	102	159	184	169	176	167	215	240	1830
TYPE D—													
Maasin ..	252	156	134	75	122	167	263	203	259	242	296	315	2484
Ormoc ..	174	112	96	80	106	198	282	232	279	250	258	202	2269
Catbalogan ..	319	198	151	138	147	211	277	198	269	290	359	374	2931
Calbayog ..	201	169	142	132	164	228	281	206	254	278	336	300	2691



Thus rainfall is very heavy, particularly in Type B areas. In exceptional circumstances, a winter or spring month may be rainless at stations which experience Type C and Type D rainfall, but such an occurrence is most unlikely where rainfall is of Type B. On the other hand, in all districts, some rain always falls in each month from July to October. At Massin 46 consecutive rainless days have been reported (April-May) and 21 days (March) at Calbayog.

Concerning the frequency of rain, rain days in Type B districts average not less than 10 per month at any time of the year and exceed 20 from October to January. With Type C, rain days during the short dry season generally average between four and 10 a month, while, during the summer and autumn rain, 15 to 20 days a month may be expected. In Type D districts more variation is apparent, although on the whole the average number of rain days a month is not less than 10 in the spring and exceeds 15 from June to December.

Serious floods are experienced. They generally follow the abnormally heavy rainfall associated with typhoons, although flooding has been known after unusually heavy NE monsoon rain.

Torrential rainfall of short duration occurs at times during thunderstorms in spring and summer. During such a storm 50 min. (2 inches) of rain has been known to fall in little more than five minutes.

5. Cloud:

Cloudiness is relatively high in all months. A minimum occurs in the spring, when the mean cloudiness generally ranges between three-tenths and five-tenths. In the summer, cloud cover exceeds seven-tenths in most districts. This is shown, for example, by the average monthly cloudiness (in tenths) at Batag, Calbayog and Guiuan.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Batag .. ..	7.2	6.5	5.9	4.9	5.0	6.0	6.6	6.1	6.3	6.5	6.8	7.0	6.2
Calbayog .. ..	6.5	6.1	5.6	4.7	5.5	6.4	7.6	7.3	7.4	6.9	6.6	6.7	6.4
Guiuan .. ..	7.1	6.2	6.0	5.3	5.6	6.6	7.0	6.8	7.1	7.0	7.0	7.1	6.6

Along the west coasts, cloudiness is greatest from June to September and least in March and April. Maximum cloudiness can be expected in the late afternoon and early morning, minimum cloudiness in the periods 0700-1100 and 2100-2400 hours.

Generally cloudiness follows the distribution of rain. With climatic Type C, the minimum of cloudiness around March and April seems more pronounced than the minimum of rain, while with Type D there is the usual least cloud cover in April, in spite of rather general rainfall.

The normal occurrence of clear days—shown as (1)—partly cloudy (2) and cloudy days (3) at Calbayog, Laoang, Masbate and Tacloban is given below.

			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calbayog..	..	1	1	0	6	6	4	6	6	2	1	6	6	5
		2	4	14	7	8	10	2	8	10	11	4	4	9
		3	26	14	18	16	17	22	17	19	18	21	20	17
Laoang ..	..	1	3	3	3	4	2	0	1	2	1	0	3	3
		2	9	9	16	10	16	7	10	8	12	6	7	9
		3	19	16	12	16	13	23	20	21	17	25	20	19
Masbate ..	..	1	3	5	7	4	4	2	6	4	2	4	3	3
		2	3	3	6	13	11	5	10	17	13	15	12	10
		3	25	20	18	13	16	23	15	10	15	12	16	18
Tacloban..	..	1	5	6	10	5	4	3	3	7	2	2	2	5
		2	6	5	6	6	12	9	9	7	6	6	6	4
		3	20	17	15	19	15	18	19	17	22	23	22	22

Much low cloud prevails along the east coast of Samar during the winter months.

When SW winds blow uninterruptedly for several days, overcast skies with low cloud bases (1,000 to 2,000 feet) prevail.



## 6. Visibility:

Visibility is generally good, fog being rare. Early morning mist is not uncommon over the land during fine weather, while it is not unlikely that visibility is often only moderate along the east coast of Samar during the NE monsoon season due to frequent rain and low cloud. In addition, along coastal areas exposed in summer to the SW monsoon, periods of only moderate visibility are probable for the same reason.

At mountain stations low clouds are often reported as fog.

## 7. Temperature:

Temperature is consistently high, the major variation being with height. The winter months of December, January and February are those of minimum temperatures. Daily extremes of temperature (deg. F) at Calbayog, Laoang, Masbate and Tacloban seldom vary from the values given below.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calbayog	Max	90	91	94	95	95	94	93	93	93	93	92	91
	Min	65	64	65	68	70	71	71	71	71	70	69	67
Laoang	Max	83	83	84	85	87	85	86	87	87	85	84	83
	Min	77	75	76	77	76	76	76	77	77	77	76	76
Masbate	Max	86	87	88	88	89	88	90	93	91	88	85	85
	Min	75	75	75	76	76	76	76	77	77	76	75	74

Temperatures about sea level seldom exceed 95° F or fall below 65° F. Generally during winter and spring, average day temperatures are somewhat higher and night temperatures lower on the west coasts than on the east coasts of the larger islands.

At inland stations, particularly if they are situated somewhat above sea level, daily and annual ranges of temperature are increased. Rigorously cold conditions may be present above 3,000 feet.

## 8. Humidity:

Relative humidity is constantly high with minimum values probably occurring in April. With stations in climatic Type B, relative humidity has a small range throughout the year, the percentage gradually increasing from September to December. The mean percentage for the whole year is less than 85 per cent. With Type C stations, relative humidity has a minimum around March and April, with highest humidity from September to January. The variation of humidity in general follows that of the rainfall. Type D stations have quite even and rather high relative humidity due to the lack of a dry season.

## 9. Miscellaneous Phenomena:

*Thunderstorms:* Frequent over and near the land during the period May-October in most districts. They are generally accompanied by severe squalls.

*Earthquakes:* Very severe earthquakes causing considerable structural damage have been reported in the region under consideration.

*Sea and Swell:* A very heavy sea is at times present along the north coast of Samar when the NE monsoon is fully developed.

San Bernardino Strait is subject to strong tidal currents and tide rips.

Minamut anchorage, which affords protection from NE winds and seas, is not recommended in strong NE monsoon weather because with a heavy NE sea, while the cove is absolutely smooth, the breakers from the reefs at the northern entrance fill it with foam and cause a strong current from that direction which quickly reverses with the receding waters. Very strong wave action during the NE monsoon is indicated from Matarinao Point to Sungi Point.

Considerable rips and overfalls are caused along the SE extremity of Samar.



## SECTION XXI—SOURCES OF INFORMATION

### 1. Publications, Organizations, etc.:

Survey of the Philippine Islands (S30-603A) MID.  
Strategic Report of the Philippine Islands, OSS.  
Philippine Interview Summary, OSS, Samar Island.  
Field Monograph of the Philippines (ONI-93) Visayan Islands.  
Special Report No 45 ERO Vols. I-IV. ERO.  
Table of Strategically Located Docking Facilities in the Philippines (MID).  
US Coast Pilot, Philippine Islands Part I, HO 1939 corrected to August 1942.  
Complete Census of the Philippines 1939. Vol. 1 Part 3.  
Census of the Philippines, 1939. Special Bulletin No. 2.  
Census Atlas of the Philippines.  
Agricultural Census of Philippine Islands 1939.  
Military Handbook of the Philippines (approximate date 1920, with numerous subsequent changes and revisions).  
Dictionary of the Philippines, Buceta, 1850.  
ASF Civil Affairs Handbooks.  
Native Tribes and Languages of the Philippines, Blumentritt (1890).  
US Naval Leyte Gulf-Samar Sea Survey 1938-1940.  
School of Public Health and Tropical Medicine, Commonwealth Health Dept.  
Combined Advisory Committee on Tropical Medicine, Hygiene and Sanitation, GHQ, SWPA.

### 2. Persons with Local Knowledge Interviewed:

Names may be obtained through G-2, GHQ.



APPENDIX "A"

1. TIMES OF SUNRISE AND SUNSET, SEP 44 - AUG 45

Based on TACLOBAN (Leyte)—11° 12' N, 125° E.

(Figures for Catbalogan (Samar) are essentially the same)

Times given are Philippine Standard Time (8 hours ahead of GMT)

SUNRISE				SUNSET			
1944				1944			
Sep	6	..	0530	Nov	1	..	0532
	13	..	0530		8	..	0534
	20	..	0529		15	..	0537
	27	..	0529		22	..	0540
					29	..	0543
Oct	4	..	0528	Dec	6	..	0547
	11	..	0529		13	..	0550
	18	..	0530		20	..	0554
	25	..	0530		27	..	0557
1945				1945			
Jan	3	..	0600	May	2	..	0521
	10	..	0602		9	..	0519
	17	..	0604		16	..	0517
	24	..	0605		23	..	0516
	31	..	0604		30	..	0515
Feb	7	..	0603	Jun	6	..	0516
	14	..	0601		13	..	0517
	21	..	0558		20	..	0518
	28	..	0556		27	..	0520
Mar	7	..	0551	Jul	4	..	0522
	14	..	0547		11	..	0523
	21	..	0543		18	..	0525
	28	..	0539		25	..	0526
Apr	4	..	0535	Aug	1	..	0528
	11	..	0531		8	..	0529
	18	..	0527		15	..	0530
	25	..	0524		22	..	0530
					29	..	0530
Sep	6	..	1747	Nov	1	..	1716
	13	..	1742		8	..	1714
	20	..	1737		15	..	1713
	27	..	1733		22	..	1713
					29	..	1714
Oct	4	..	1729	Dec	6	..	1716
	11	..	1724		13	..	1719
	18	..	1721		20	..	1722
	25	..	1718		27	..	1726
Jan	3	..	0530	May	2	..	0553
	10	..	0534		9	..	0554
	17	..	0537		16	..	0556
	24	..	0541		23	..	0558
	31	..	0544		30	..	0559
Feb	7	..	0546	Jun	6	..	0601
	14	..	0548		13	..	0603
	21	..	0549		20	..	0605
	28	..	0549		27	..	0606
Mar	7	..	0551	Jul	4	..	0607
	14	..	0551		11	..	0607
	21	..	0551		18	..	0607
	28	..	0551		25	..	0606
Apr	4	..	0551	Aug	1	..	0604
	11	..	0551		8	..	0601
	18	..	0552		15	..	0559
	25	..	0552		22	..	0555
					29	..	0551



APPENDIX "A" (Cont'd)

2. TIMES OF MOONRISE, SEP 44 - AUG 45

Based on TACLOBAN (Leyte)—11° 12' N, 125° E.  
(Figures for Catbalogan (Samar) are essentially the same)

Times given are Philippine Standard Time (8 hours ahead of GMT)

1944												1945											
Date	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug											
1	1637	1659	1804	1829	1954	2059	1940	2040	2109	2236	2257	2359											
2	1732	1750	1857	1925	2044	2144	2025	2129	2203	2326	2343	—											
3	1024	1840	1951	2020	2133	2229	2110	2220	2256	—	—	0048											
4	1914	1929	2044	2113	2220	2316	2157	2313	2347	0013	0028	0140											
5	2003	2019	2139	2204	2306	—	2244	—	—	0059	0113	0236											
6	2051	2111	2232	2254	2351	0003	2334	0007	0039	0144	0201	0333											
7	2141	2204	2323	2341	—	0052	—	0101	0128	0231	0255	0430											
8	2230	2255	—	—	0036	0144	0027	0154	0216	0319	0349	0525											
9	2320	2349	0013	0027	0123	0239	0121	0246	0304	0411	0446	0619											
10	—	—	0100	0112	0212	0336	0218	0337	0352	0506	0544	0709											
11	0011	0040	0147	0158	0304	0433	0313	0427	0441	0602	0641	0758											
12	0103	0129	0233	0245	0359	0530	0408	0516	0532	0700	0736	0845											
13	0154	0218	0318	0332	0456	0624	0501	0605	0626	0759	0828	0931											
14	0243	0306	0404	0423	0553	0715	0552	0655	0721	0855	0918	1016											
15	0333	0351	0451	0517	0649	0806	0641	0748	0819	0949	1005	1102											
16	0420	0436	0541	0612	0744	0854	0730	0842	0917	1038	1051	1150											
17	0508	0522	0632	0709	0836	0941	0819	0936	1013	1126	1137	1238											
18	0553	0608	0725	0806	0926	1028	0908	1032	1106	1213	1223	1329											
19	0638	0657	0820	0901	1012	1116	1000	1128	1157	1257	1308	1423											
20	0724	0747	0916	0951	1057	1206	1052	1221	1245	1343	1357	1518											
21	0811	0838	1009	1041	1143	1258	1146	1312	1332	1429	1448	1613											
22	0858	0931	1103	1128	1231	1350	1240	1402	1417	1517	1542	1706											
23	0948	1026	1154	1214	1319	1444	1334	1449	1502	1606	1637	1758											
24	1040	1119	1242	1259	1409	1538	1426	1535	1547	1659	1732	1847											
25	1134	1213	1329	1344	1501	1629	1516	1620	1634	1752	1825	1935											
26	1230	1305	1416	1433	1555	1719	1604	1705	1722	1847	1918	2022											
27	1325	1355	1503	1523	1651	1808	1652	1752	1813	1940	2007	2109											
28	1422	1445	1551	1615	1743	1854	1737	1838	1905	2033	2055	2156											
29	1516	1534	1641	1710	1836	—	1822	1926	1959	2123	2141	2246											
30	1609	1623	1734	1805	1925	—	1907	2017	2052	2212	2226	2338											
31	—	1713	—	1901	2013	—	1953	—	2145	—	2311	—											

3. TIMES OF MOONSET, SEP 44 - AUG 45

1944												1945											
Date	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug											
1	0338	0417	0557	0638	0803	0848	0723	0754	0803	0932	1015	1153											
2	0436	0518	0657	0737	0849	0925	0801	0835	0952	1028	1109	1250											
3	0538	0618	0757	0833	0933	1002	0837	0919	0945	1123	1205	1348											
4	0639	0718	0855	0924	1013	1040	0915	1006	1040	1219	1301	1448											
5	0738	0816	0951	1013	1051	1118	0955	1057	1137	1315	1357	1547											
6	0834	0915	1043	1057	1128	1200	1038	1150	1234	1412	1457	1643											
7	0932	1013	1133	1138	1205	1244	1124	1248	1331	1509	1558	1736											
8	1027	1109	1219	1217	1243	1333	1212	1346	1427	1609	1658	1825											
9	1123	1202	1302	1254	1324	1425	1306	1445	1525	1710	1757	1910											
10	1216	1252	1341	1331	1407	1521	1403	1545	1625	1812	1853	1951											
11	1306	1338	1419	1410	1455	1623	1503	1644	1725	1914	1945	2030											
12	1355	1421	1456	1449	1545	1722	1603	1744	1827	2012	2032	2108											
13	1461	1503	1534	1529	1641	1824	1704	1844	1929	2105	2115	2144											
14	1523	1542	1613	1616	1740	1924	1805	1946	2031	2155	2156	2221											
15	1603	1619	1653	1705	1839	2022	1904	2046	2131	2240	2233	2301											
16	1642	1657	1736	1758	1940	2120	2004	2148	2225	2320	2310	2342											
17	1719	1735	1822	1834	2038	2218	2103	2247	2316	2400	2347	—											
18	1757	1813	1912	1952	2136	2314	2202	2343	—	—	—	0026											
19	1835	1856	2005	2051	2232	—	2301	—	0002	0036	0026	0114											
20	1914	1939	2101	2149	2327	0011	2400	0034	0045	0113	0105	0206											
21	1955	2026	2158	2246	—	0108	—	0121	0124	0150	0149	0301											
22	2040	2116	2256	2341	0023	0204	0055	0205	0201	0229	0236	0400											
23	2129	2209	2353	—	0119	0258	0148	0246	0238	0311	0325	0458											
24	2220	2306	—	0036	0216	0349	0237	0324	0315	0355	0418	0557											
25	2316	—	0050	0132	0313	0439	0322	0401	0353	0442	0516	0655											
26	—	0003	0146	0228	0408	0523	0405	0437	0432	0535	0614	0753											
27	0015	0102	0243	0325	0503	0606	0445	0515	0515	0630	0712	0850											
28	0116	0201	0340	0423	0554	0646	0523	0554	0600	0726	0810	0947											
29	0216	0259	0439	0522	0643	—	0600	0634	0649	0823	0905	1045											
30	0316	0358	0538	0618	0727	—	0637	0718	0741	0920	1000	1144											
31	—	0458	—	0713	0809	—	0714	—	0835	—	1057	1243											

4. PHASES OF MOON, SEP 44 - AUG 45

1944												1945											
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug											
Last Quarter	..	9	9	8	8	6	5	7	5	5	3	1											
New Moon	..	17	17	16	16	14	12	14	12	11	10	8											
First Quarter	..	25	25	23	23	20	19	20	19	18	17	16											
Full Moon	..	3	2—31	30	30	28	27	28	27	27	25	23											



# APPENDIX "B"

## JAPANESE EQUIVALENTS OF PLACE NAMES

The following Japanese equivalents for place names in the Samar Province area are supplied by Allied Translator and Interpreter Section, SWPA.

<i>Name</i>	<i>Romaji</i>	<i>Character</i>
Allen . . . . .	Aren . . . . .	アレン
Almagro . . . . .	Arumaguro . . . . .	アルマグロ
Almagro Island . . . . .	Arumaguro Jima . . . . .	アルマグロ島
Anahao Island . . . . .	Anahana Jima . . . . .	アナハナ島
Anas Point . . . . .	Anasu Misaki . . . . .	アナス岬
Balangiga . . . . .	Barangiga . . . . .	バランギガ
Balicutro Islands . . . . .	Barikieatoro Jima . . . . .	バリキエアトロ島
Basey . . . . .	Basai . . . . .	バサイ
Basey River . . . . .	Basai Gawa . . . . .	バサイ河
Bato River . . . . .	Bato Gawa . . . . .	バト河
Bobon . . . . .	Bohon . . . . .	ボホン
Borongan . . . . .	Borongan . . . . .	ボロンガン
Buad Island . . . . .	Buado Jima . . . . .	ブアド島
Bunga Point . . . . .	Bunga Misaki . . . . .	ブンガ岬
Calbayog . . . . .	Karubayaggu . . . . .	カルバヤッグ
	Karebayodda . . . . .	カレバヨツダ
Calbiga . . . . .	Kuruhiga . . . . .	クルヒガ
Calbiga River . . . . .	Kuruhiga Gawa . . . . .	クルヒガ河



<i>Name</i>	<i>Romaji</i>	<i>Character</i>
Calicoan Island . . . .	Karikoan Jima . . . .	カリコアン島
Camandag Island . . . .	Kamandagu Jima . . . .	カマンドラグ島
Candolu Island . . . .	Kandoru Jima . . . .	カンドル島
Canahauan Islands . . . .	Kiyanahauan Shoto . .	キヤナハウアン諸島
Catbalogan . . . . .	Katabarogan . . . . .	カタバロガン
Catarman . . . . .	Kataruman . . . . .	カタルマン
Capul . . . . .	Kapuoru . . . . .	カプオル
Concord . . . . .	Konkoruto . . . . .	コンコルト
Catubig . . . . .	Katoubigu . . . . .	カトウビグ
Cape Espiritu Santo . . . .	Esupiritousanto Misaki .	エスピリトウサント岬
Capul Passage . . . . .	Kapuoru Kaikyo . . . .	カプオル海峡
Capul Island . . . . .	Kapuoru Jima . . . . .	カプオル島
Daram Island . . . . .	Daramujima . . . . .	ダラム島
Dalupiri Island . . . . .	Darupiri Jima . . . . .	ダルピリ島
Dolores . . . . .	Doroasu . . . . .	ドロアス
Dolores River . . . . .	Doroasu Gawa . . . . .	ドロアス河
Gamay Bay . . . . .	Gamai Wan . . . . .	ガマイ湾
Gamay River . . . . .	Gamai Gawa . . . . .	ガマイ河
Gandara . . . . .	Gantara . . . . .	ガンタラ
Gandara River . . . . .	Gantara Gawa . . . . .	ガンタラ河
Guiuan . . . . .	Giuan . . . . .	ギウアン
Hernani . . . . .	Herunani . . . . .	ヘルナニ
Hinabangan . . . . .	Hinabangan . . . . .	ヒナバンガン
Homonhon Island . . . .	Omonhom Jima . . . .	オモンホン島
Jipapad . . . . .	Jipapado . . . . .	ジパパド
Laoang . . . . .	Raoan . . . . .	ラオアン

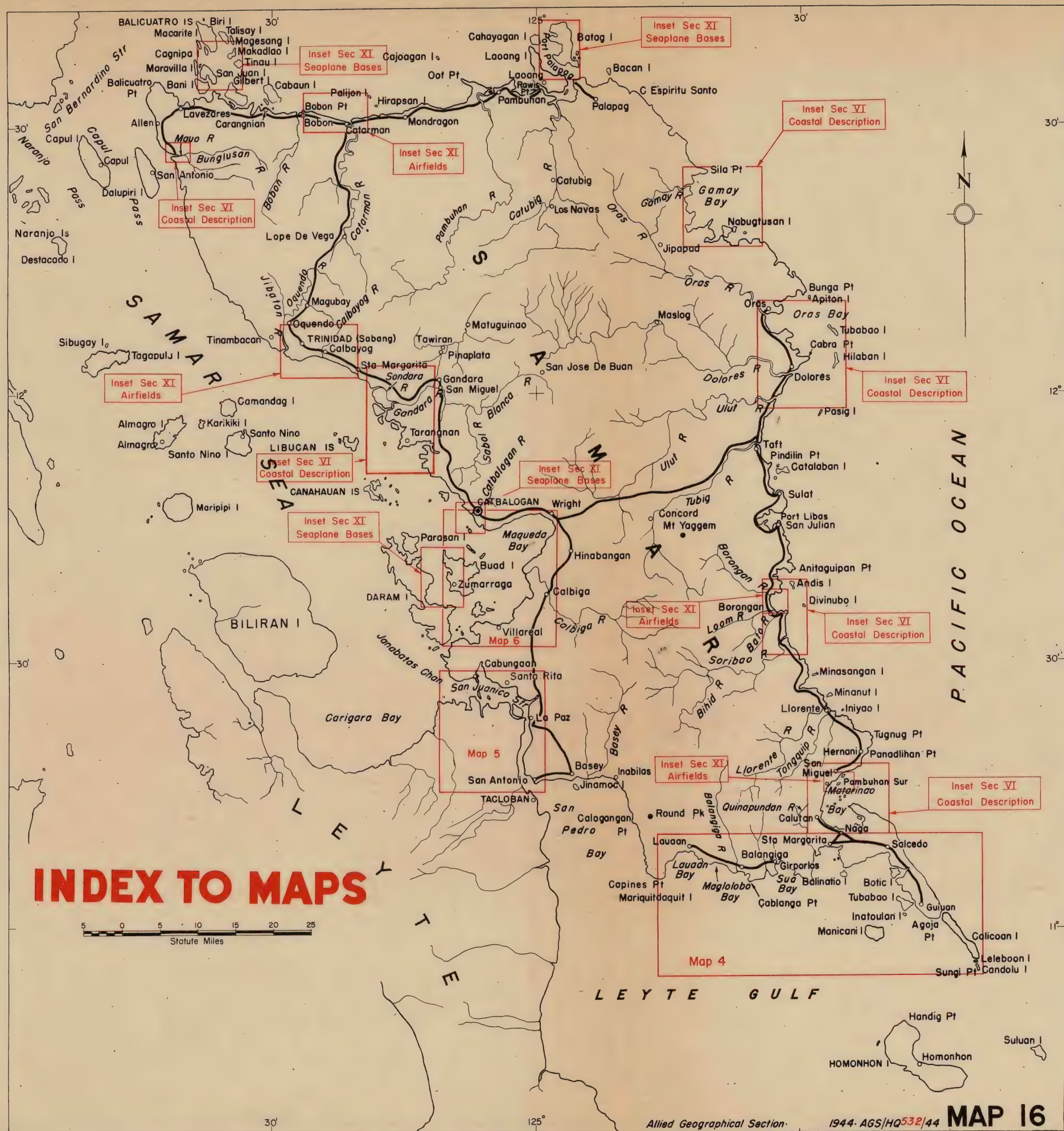


<i>Name</i>	<i>Romaji</i>	<i>Character</i>
Lavezares . . . . .	Rabezaresu . . . . .	ラベザレス
Leyte Gulf . . . . .	Reite Wan . . . . .	レイテ湾
Leyte Island . . . . .	Reite Jima . . . . .	レイテ島
Libucan Islands . . . . .	Ribukan Jima . . . . .	リブカン島
Llorente . . . . .	Rurorento . . . . .	ルロレント
Llorente River . . . . .	Rurorento Gawa . . . . .	ルロレント河
Maqueda Bay . . . . .	Makedo Wan . . . . .	マケド湾
Manicani Island . . . . .	Manikani Jima . . . . .	マニカニ島
Maslog . . . . .	Masurogu . . . . .	マスログ
Matarinao Bay . . . . .	Matarinao Wan . . . . .	マタリナオ湾
Matuguinao . . . . .	Matouginao . . . . .	マトウギナオ
Naranjo Islands . . . . .	Naran Shoto . . . . .	ナラン諸島
Naranjo Passage . . . . .	Naranho Suido . . . . .	ナランホ水道
Oquendo . . . . .	Okuendo . . . . .	オクエンド
Oquendo River . . . . .	Okuendo Gawa . . . . .	オクエンド河
Oras . . . . .	Orasu . . . . .	オラス
Oras River . . . . .	Orasu Gawa . . . . .	オラス河
Oras Bay . . . . .	Orasu Wan . . . . .	オラス湾
Pacific Ocean . . . . .	Taiheiyo . . . . .	大平洋
Palapag . . . . .	Parapagu . . . . .	パラパグ
Pambuhan . . . . .	Pamubuhan . . . . .	パムブハン
Parasan Island . . . . .	Harasan Jima . . . . .	ハラサン島
Salcedo . . . . .	Sarusedo . . . . .	サルセド
Samar . . . . .	Samaru . . . . .	サマル
Samar Sea . . . . .	Samaru Kai . . . . .	サマル海

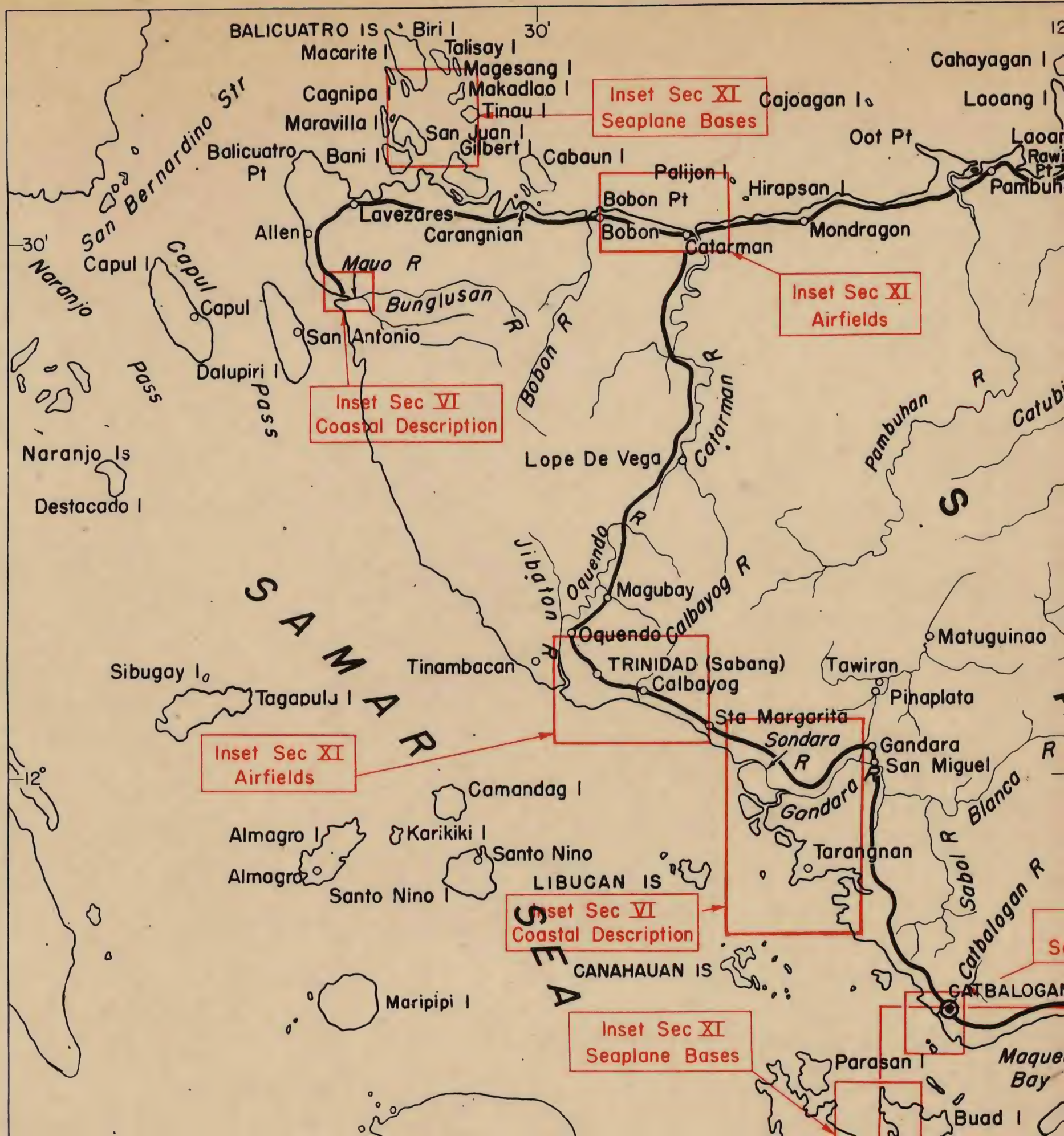


<i>Name</i>	<i>Romaji</i>	<i>Character</i>
San Bernardino Strait ..	San Berunanojino Kaikyo	サンベルナノジノ海峡
San Antonio .. . . .	San Antonio .. . . .	サンアントニオ
San Jose De Buan .. .	San Hose Debuan .. .	サンホセデブアン
San Julian .. . . . .	San Furian .. . . . .	サンフリアン
Santa Margarita .. . .	Santa Marugarita .. .	サンタマルガリタ
Santo Nino .. . . . .	Santo Nino .. . . . .	サントニノ
Santo Nino Island .. .	Santo Nino Jima .. .	サントニノ島
San Pedro Bay .. . . .	San Pedoro Wan .. .	サンペドロ湾
Santa Rita .. . . . .	Santa Rita .. . . . .	サンタリタ
Sila Point .. . . . .	Shira Misaki .. . . .	シラ岬
Soribao River .. . . .	Soribao Gawa .. . . .	ソリバオ河
Sulat .. . . . . . . .	Suratto .. . . . . . .	スラット
Suluan Island .. . . .	Saruan Jima .. . . .	サルアン島
Sungi Point .. . . . .	Sungi Misaki .. . . .	スンギ岬
Taft .. . . . . . . . .	Tafuto .. . . . . . . .	タフト
Tarangnan .. . . . . .	Tarangunan .. . . . .	タランゲナン
Tinambacan .. . . . .	Teinambakan .. . . .	テイナンバカン
Tubig River .. . . . .	Toubigu Gawa .. . . .	トゥビグ河
Ulut River .. . . . . .	Urutou Gawa .. . . .	ウルトゥ河
Villareal .. . . . . .	Buirarearu .. . . . .	ヴィラリアル
Villareal Bay .. . . .	Buirarearu Wan .. . .	ヴィラリアル湾
Wright .. . . . . . . .	Raito .. . . . . . . .	ライト
Zumarraga .. . . . . .	Sumaraga .. . . . . .	ズマラガ

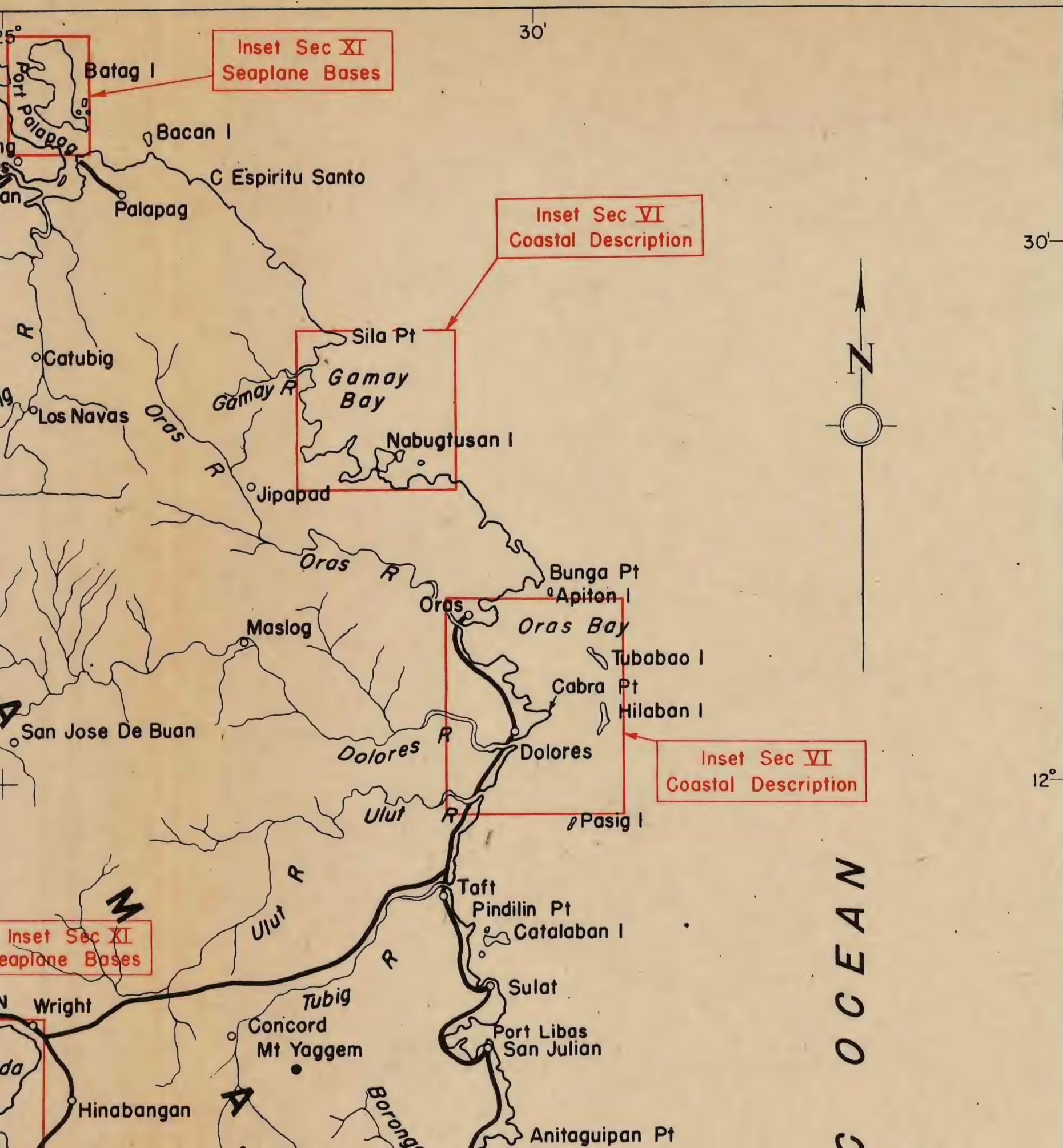




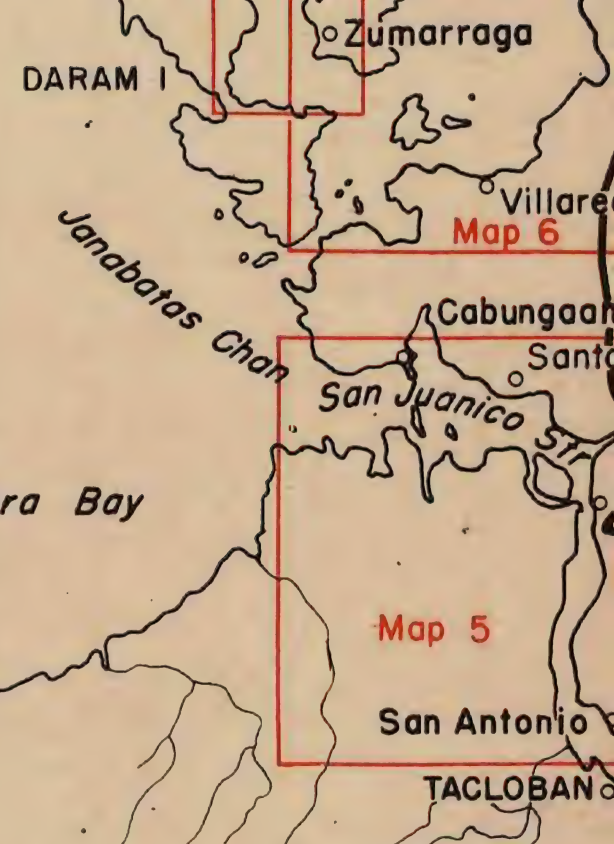




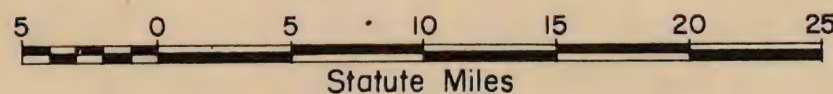








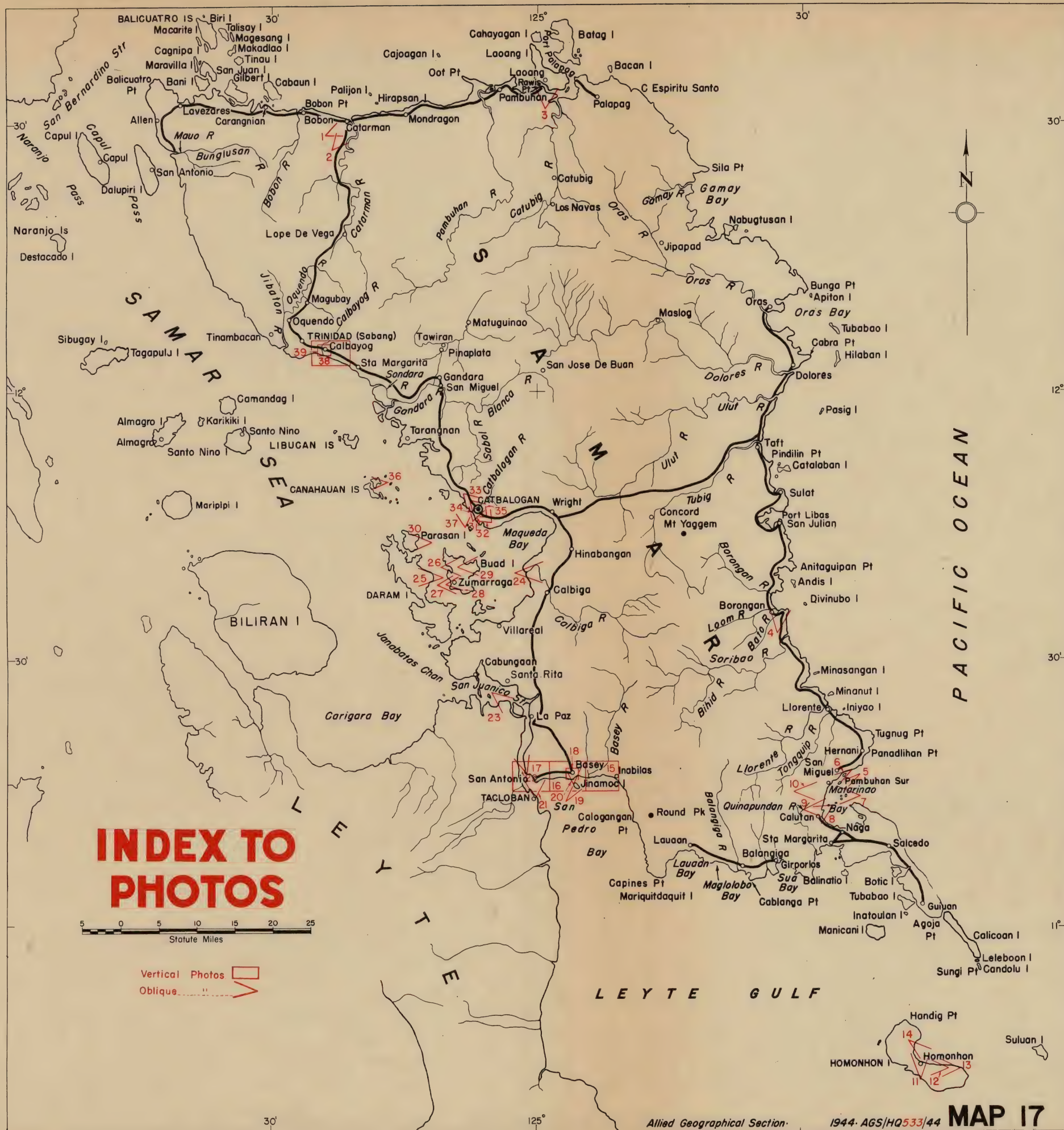
# INDEX TO MAPS













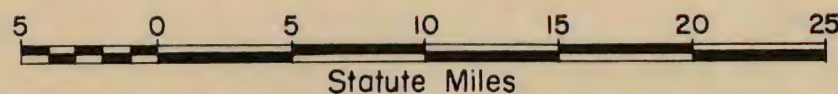






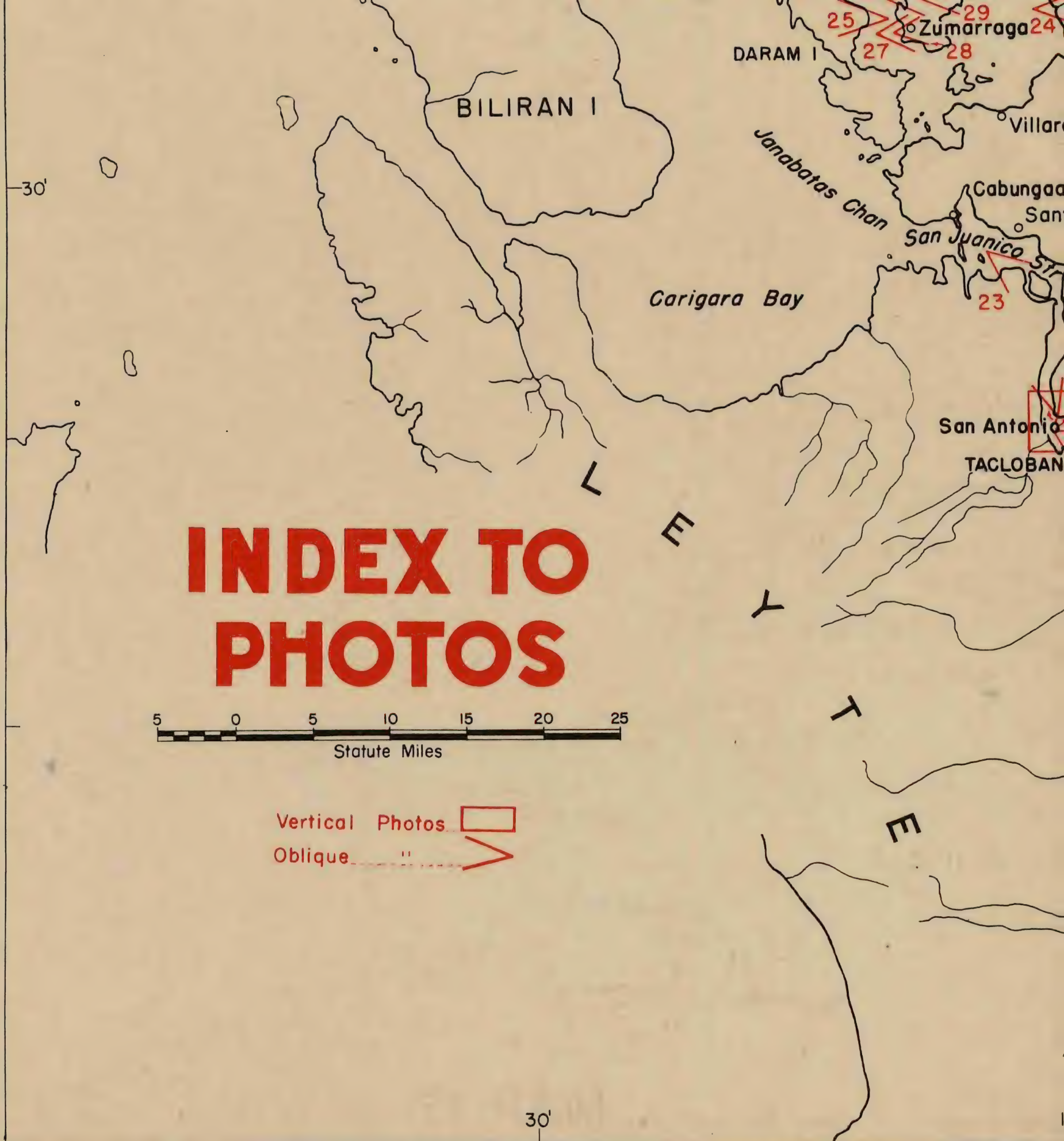




# INDEX TO PHOTOS



Vertical Photos   
Oblique " 











1. North coast of Samar, showing town of Catarman and Catarman airfield. Note surf conditions and offshore dangers during latter part of NE monsoon season (March). Looking ENE. 1939.





2. Approximately the same area as photo No. 1, showing absence of surf during SW monsoon period (August). Looking NE. 1938.





3. Inter-island steamer "Governor Taft" (270 tons, 9ft. 9in. draft) in Laoang channel, Laoang. Looking North. Pre-war.





4. Borongan Airfield and level surrounding terrain that could be developed for additional airfields. Town of Borongan just off picture to the left on far bank of Loom River. Note mild surf condition in latter part of October. Looking North. 1939.





5. Landing field on Anahao Island. Note heavy swamp growth and inundated areas beyond end of field. Samar Iron Mining Company pier in background. Note narrow coastal plain behind far shore. Looking SW. 1939.





6. Close up of barrio Pambuhan Sur, showing beach at high water. Looking SW. 1937.





7. Native boat in Matarinao Bay. Typical jungle growth around Matarinao Bay shown in background. Looking West. 1937





8. Ore loading pier of Samar Iron Mining Company near Pambuhan Sur in Matarinao Bay. Looking WSW. Pre-war.





9. Large ore boat loading at Samar Iron Mining Co. pier in Matarinao Bay. Looking East. Pre-war.





10. Samar Iron Mining Company installations, five miles West of barrio Pambuhan Sur. Looking East. Pre-war.





11. Casogoran Bay ; taken from beach in front of barrio Homonhon. Looking North. Pre-war.





12. Looking West at Paporan Point, Homonhon Island, showing inhospitable coastal terrain. Note trees stripped of their foliage by NE. monsoon winds. Pre-war.





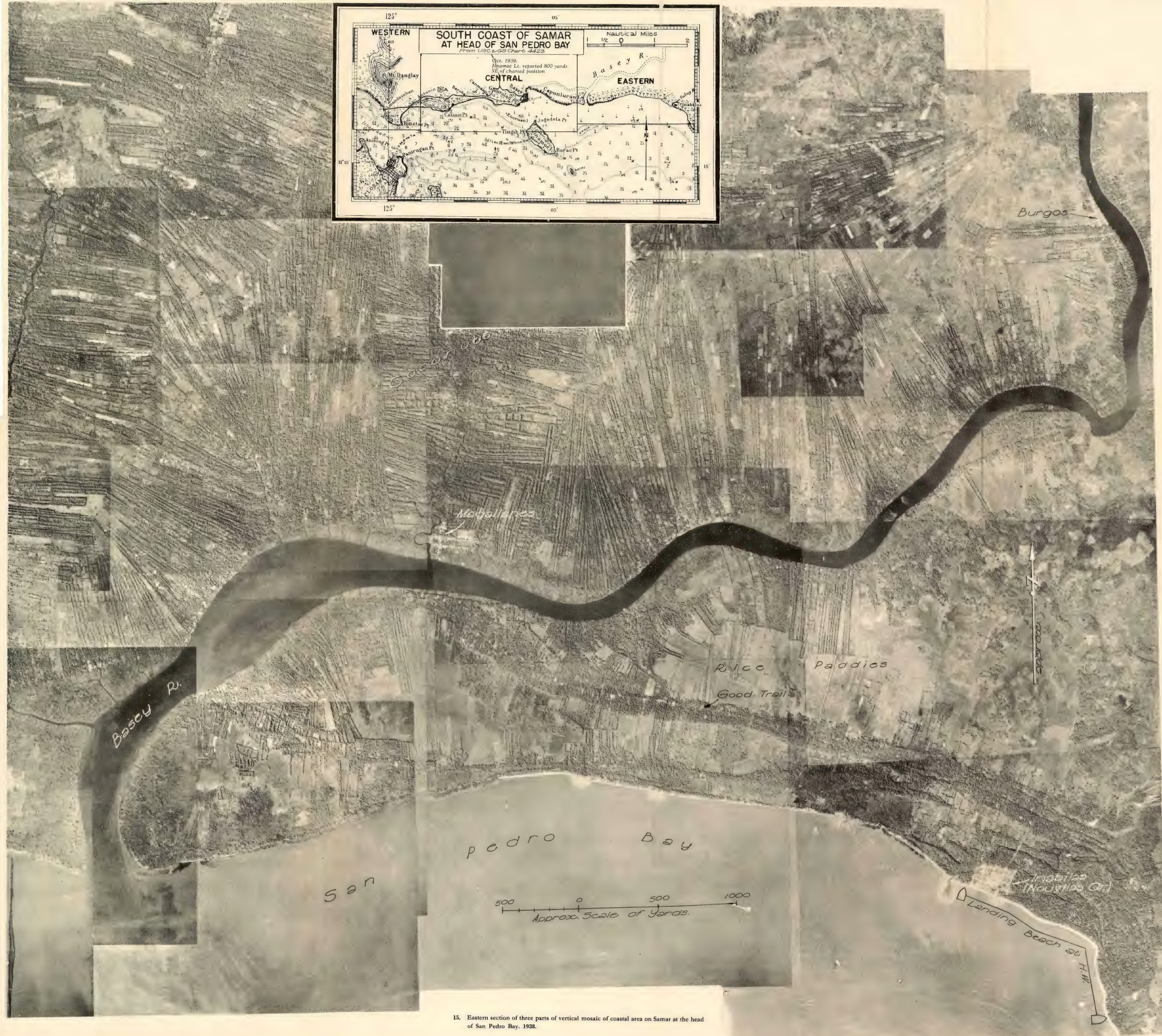
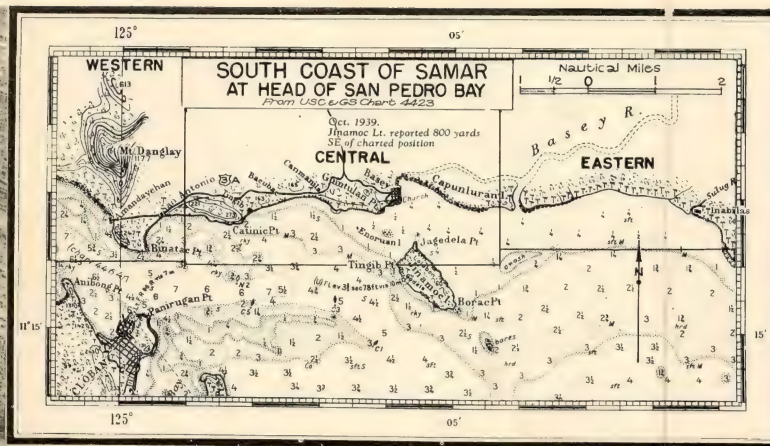
13. Steep cliffs of Homonhon Island, East of Paporan Point. Looking West. Pre-war.





14. Heavy coastal coral along beach East of barrio Homonhon I. Looking SE. Pre-war.





15. Eastern section of three parts of vertical mosaic of coastal area on Samar at the head of San Pedro Bay, 1938.







125°

05'

WESTERN

SOUTH COAST OF SAMAR  
AT HEAD OF SAN PEDRO BAY

From USC &amp; GS Chart 4423

Oct. 1939.

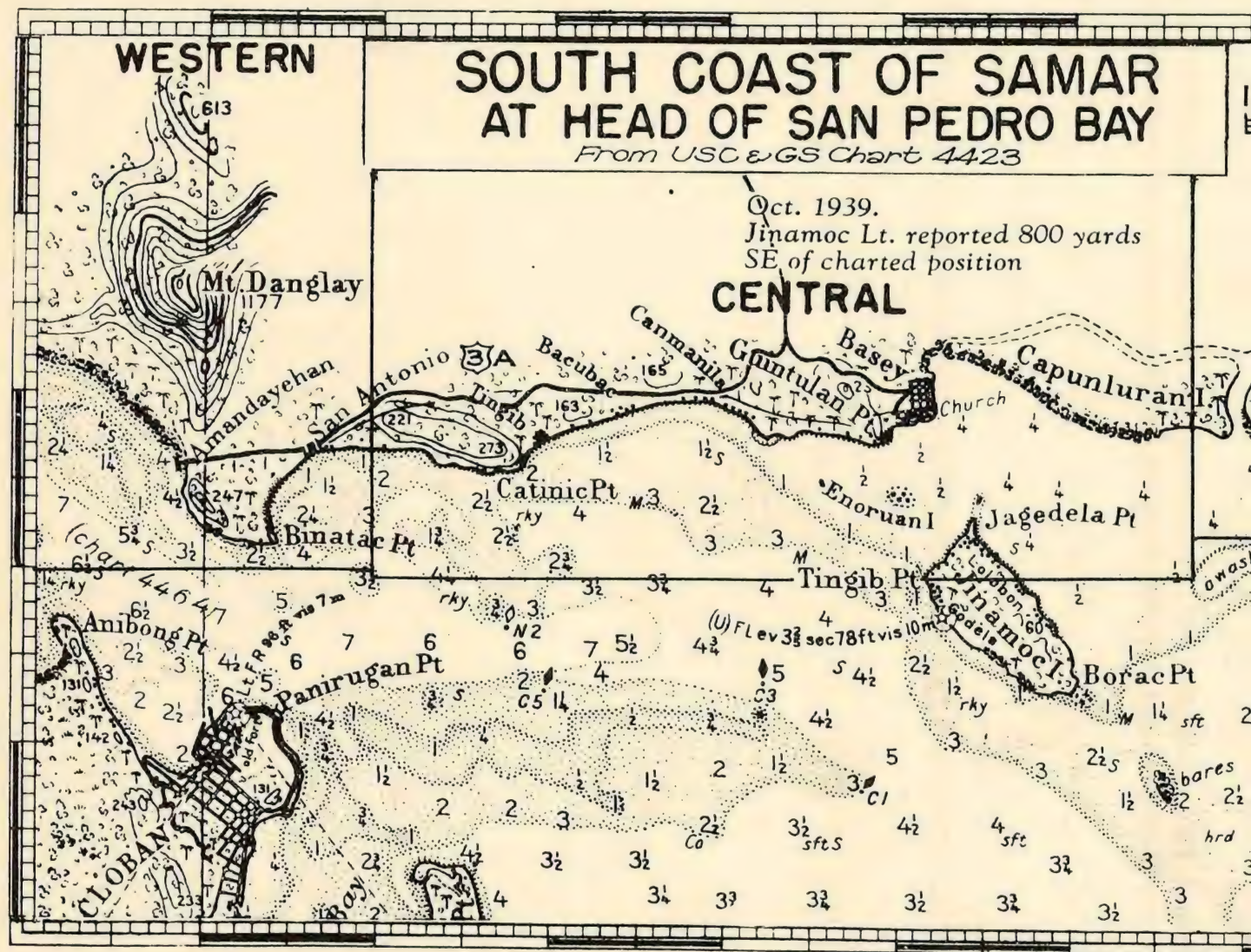
Jinamoc Lt. reported 800 yards  
SE of charted position

CENTRAL

11° 15'

125°

05'











Burgos





p.



Cocor

Magallanes





*Rice*

*Paddies*

*Good Trail*





Z

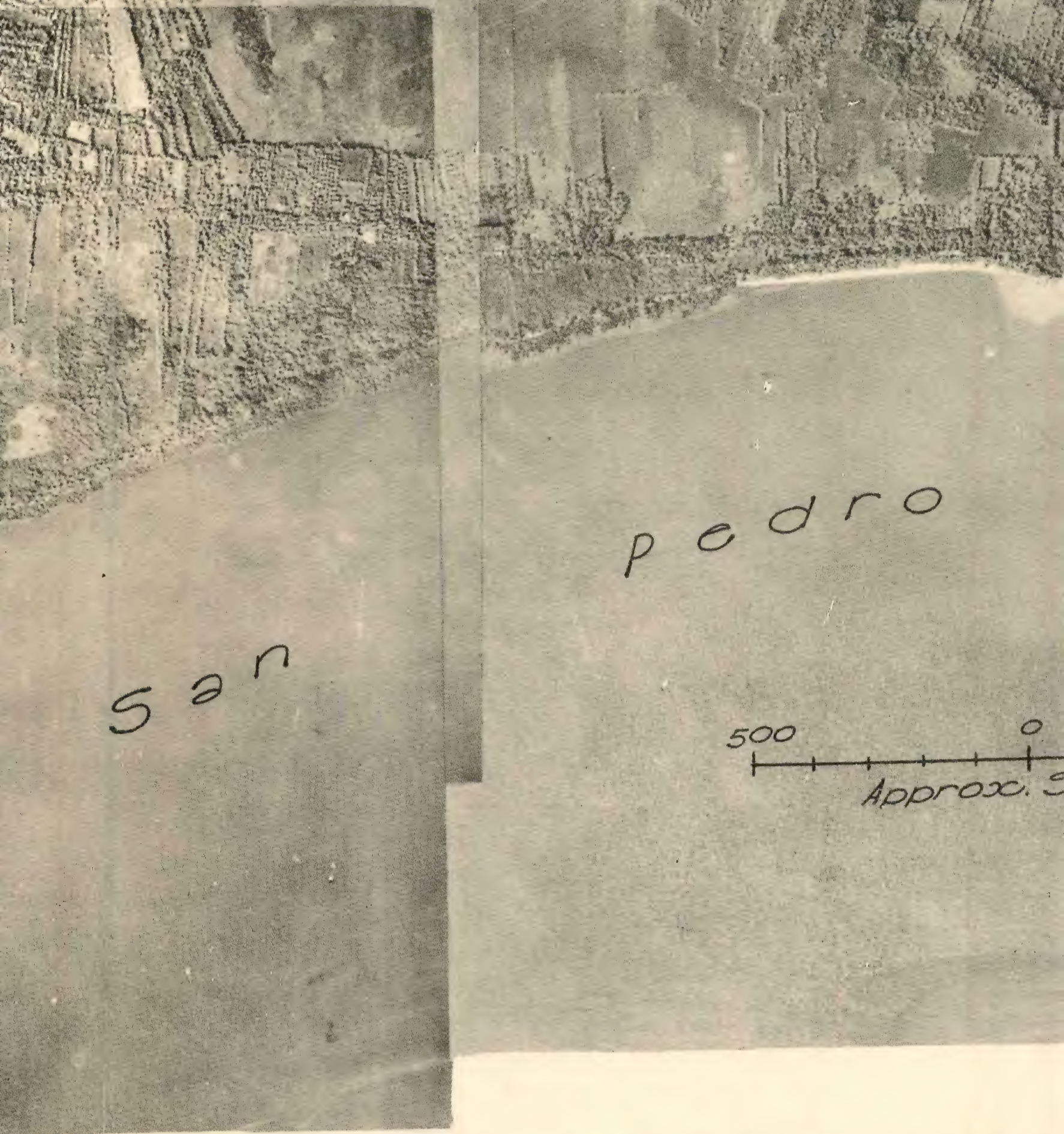
approx.



Bæscy







15. Eastern section of three parts of vertical mo  
of San Pedro Bay. 1938.




B a y

500 1000  
Scale of Yards.

osaic of coastal area on Samar at the head



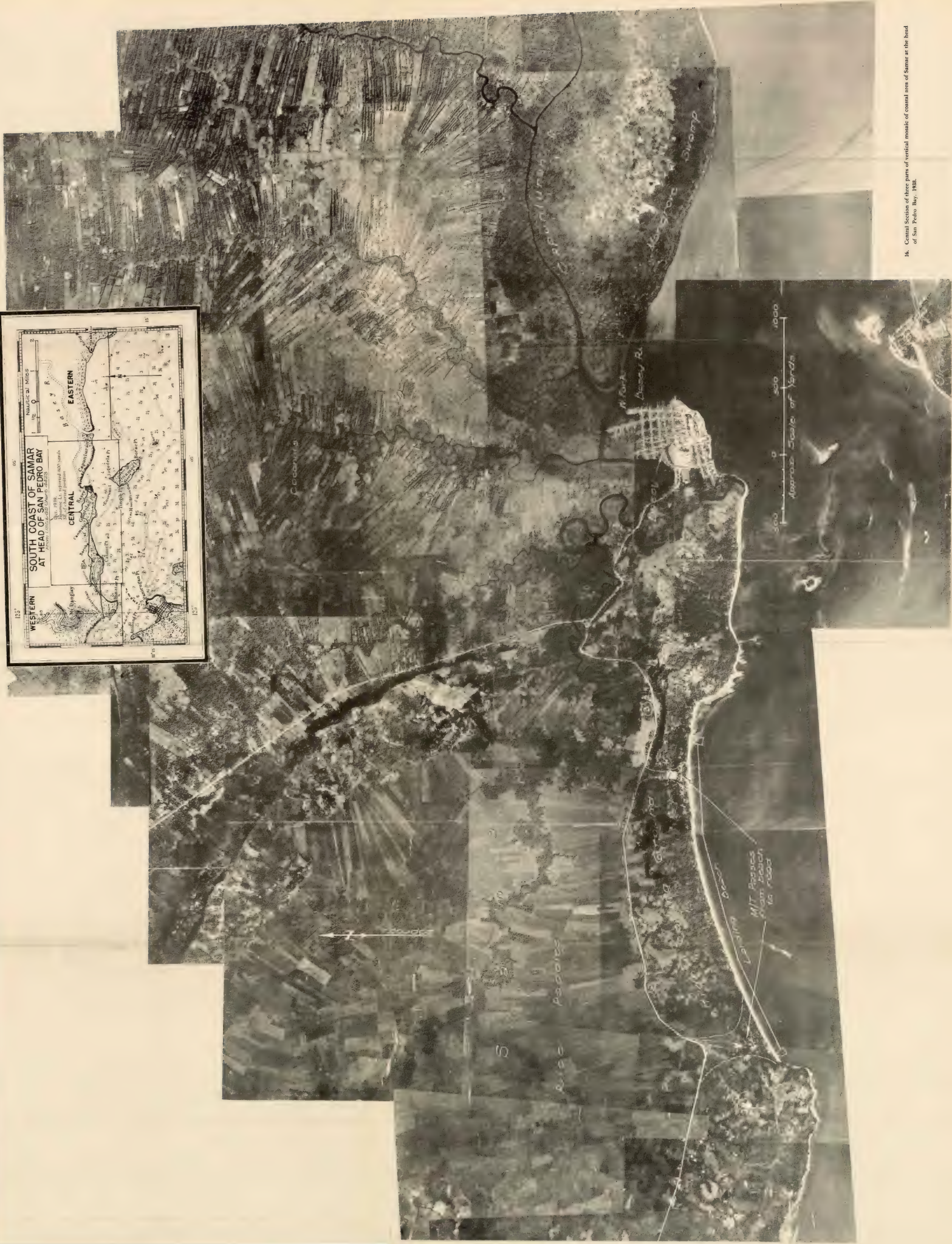


An aerial photograph of a coastal region. The land area is characterized by a grid-like pattern of fields or agricultural plots. A body of water is visible in the lower-left corner. Handwritten labels in white ink are present: 'Inabilas (Nouvillas Or.)' is written in the center-right, and 'Landing Beach at H.W.' is written along the coastline in the lower-left, with a line connecting the two points. Small hand-drawn symbols, resembling D-shapes, are placed at the ends of the line on the beach.

Inabilas  
(Nouvillas Or.)

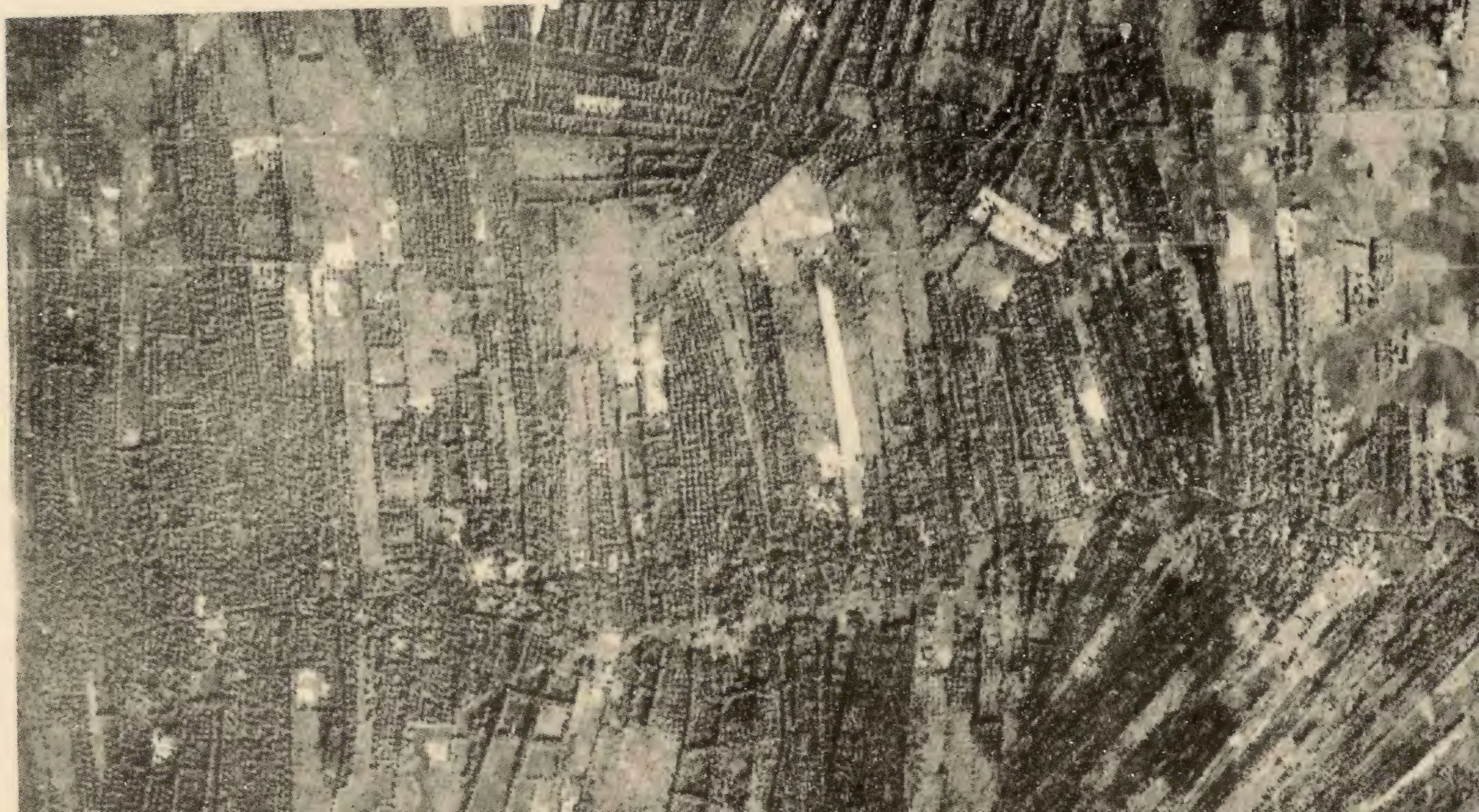
Landing Beach at  
H.W.



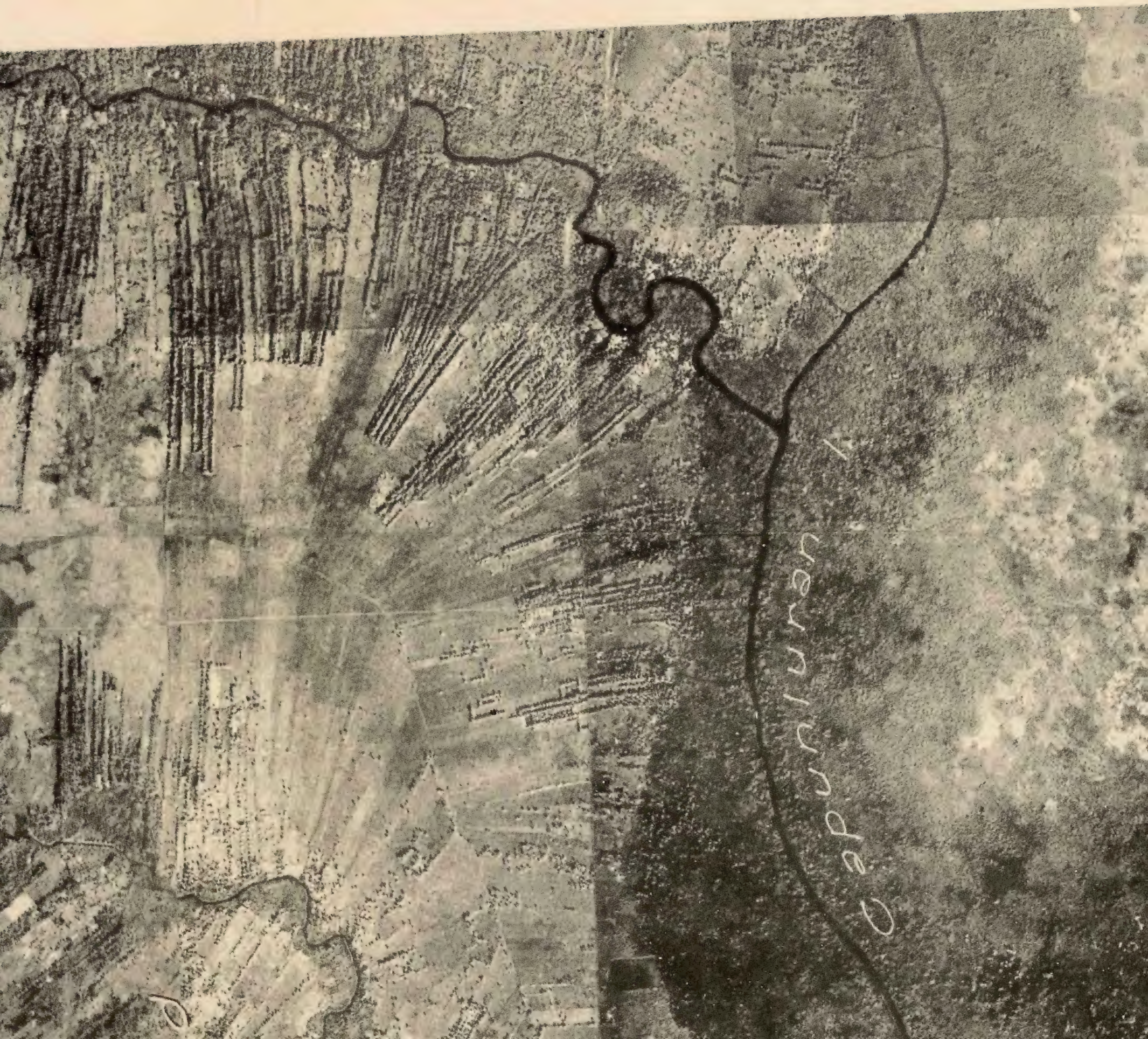


16. Central Section of three parts of vertical mosaic of coastal areas of Samar at the head of San Pedro Bay, 1948.













16. Central Section of three parts of vertical mosaic of coastal area of Samar at the head of San Pedro Bay. 1938.



125°

05'

WESTERN

# SOUTH COAST OF SAMAR AT HEAD OF SAN PEDRO BAY

From USC &amp; G.S. Chart 4423

Nautical Miles

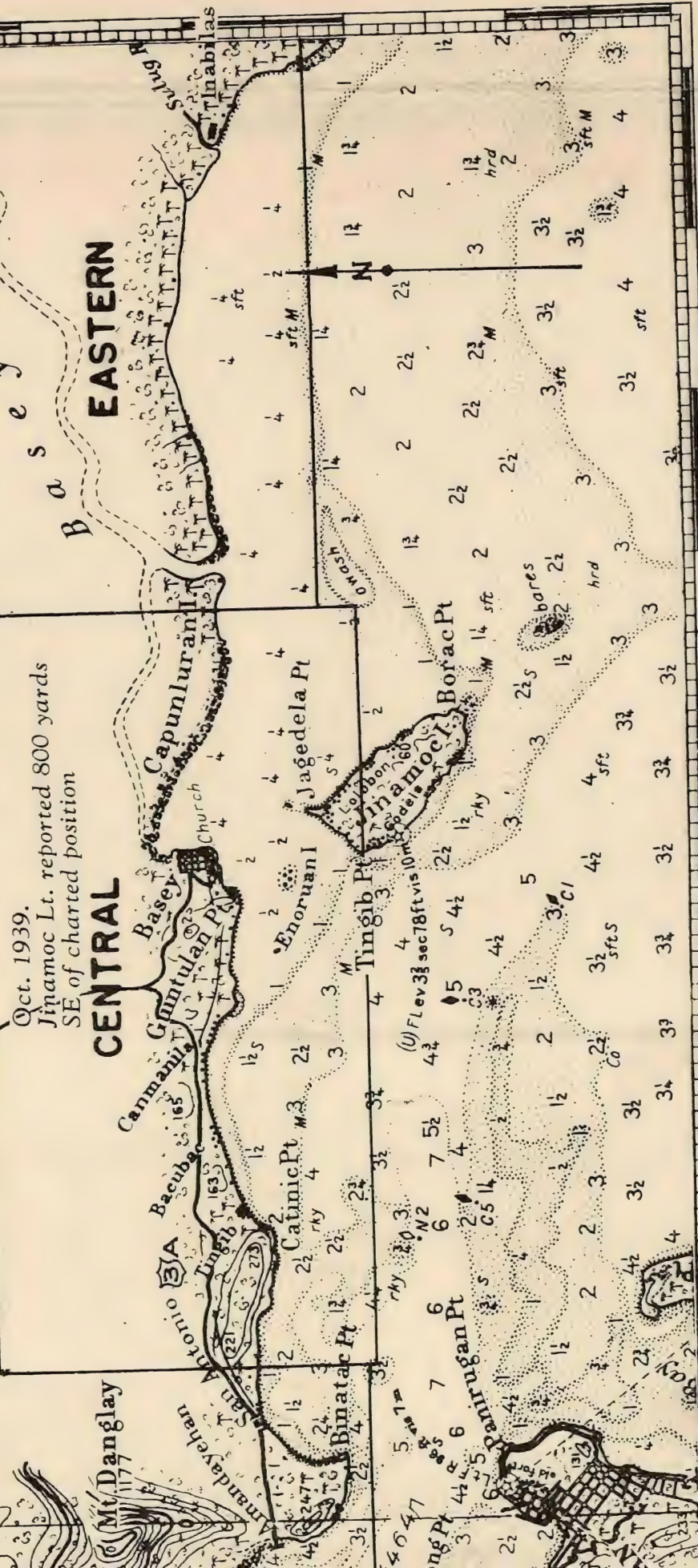


B a s e y

CENTRAL

EASTERN

Oct. 1939.

Jinamoc Lt. reported 800 yards  
SE of charted position

125°

05'

Coconuts





W. Fork



Dasey R.

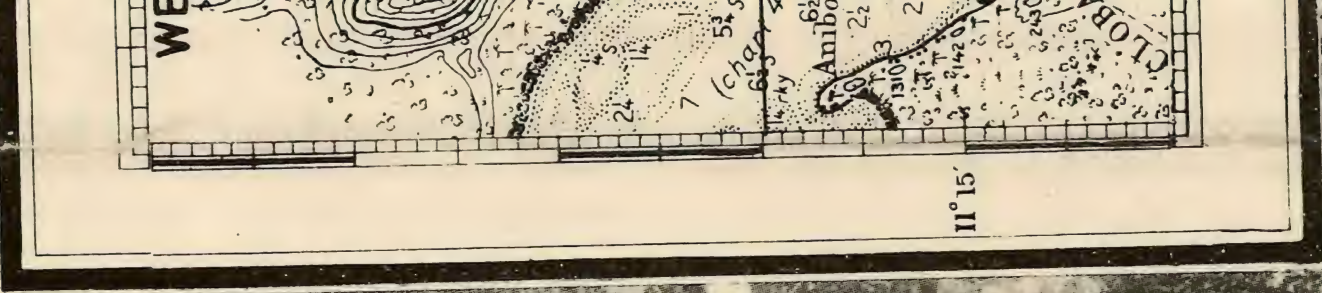
Dasey

500 0 500 1000

Approx. Scale of Yards.

Jinamda





11° 15'









A

Ground  
Building

ding  
Beach

M/T. Passes  
from beach  
to road.







S

Rice

Paddies









17. Western section of three parts of vertical mosaic of coastal area of Samar at the head of San Pedro Bay, 1948.









3

San Antonio

Landing Buena Vista

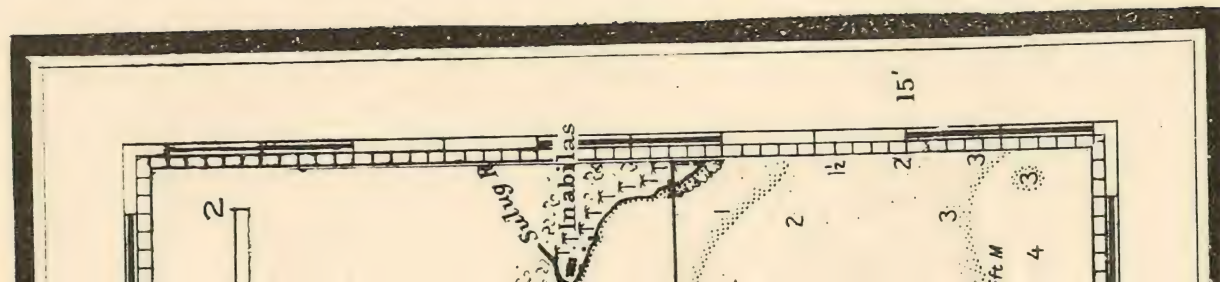
San Pedro Bay

San

Binatiao Pt.



17. Western section of three parts of vertical mosaic of coastal area of Samar at the head of San Pedro Bay. 1938.







D

m

D

S

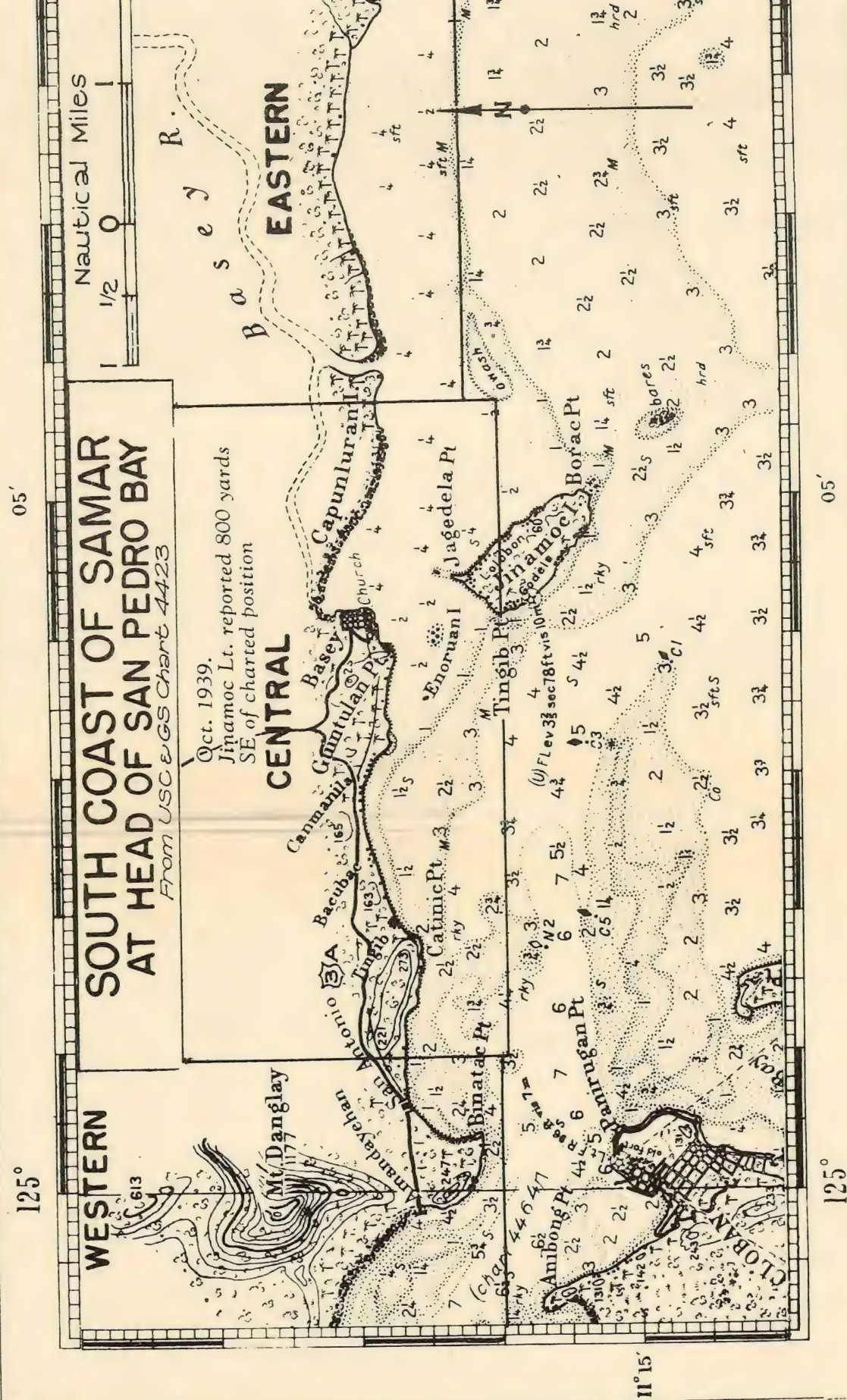
Mx

Dangle

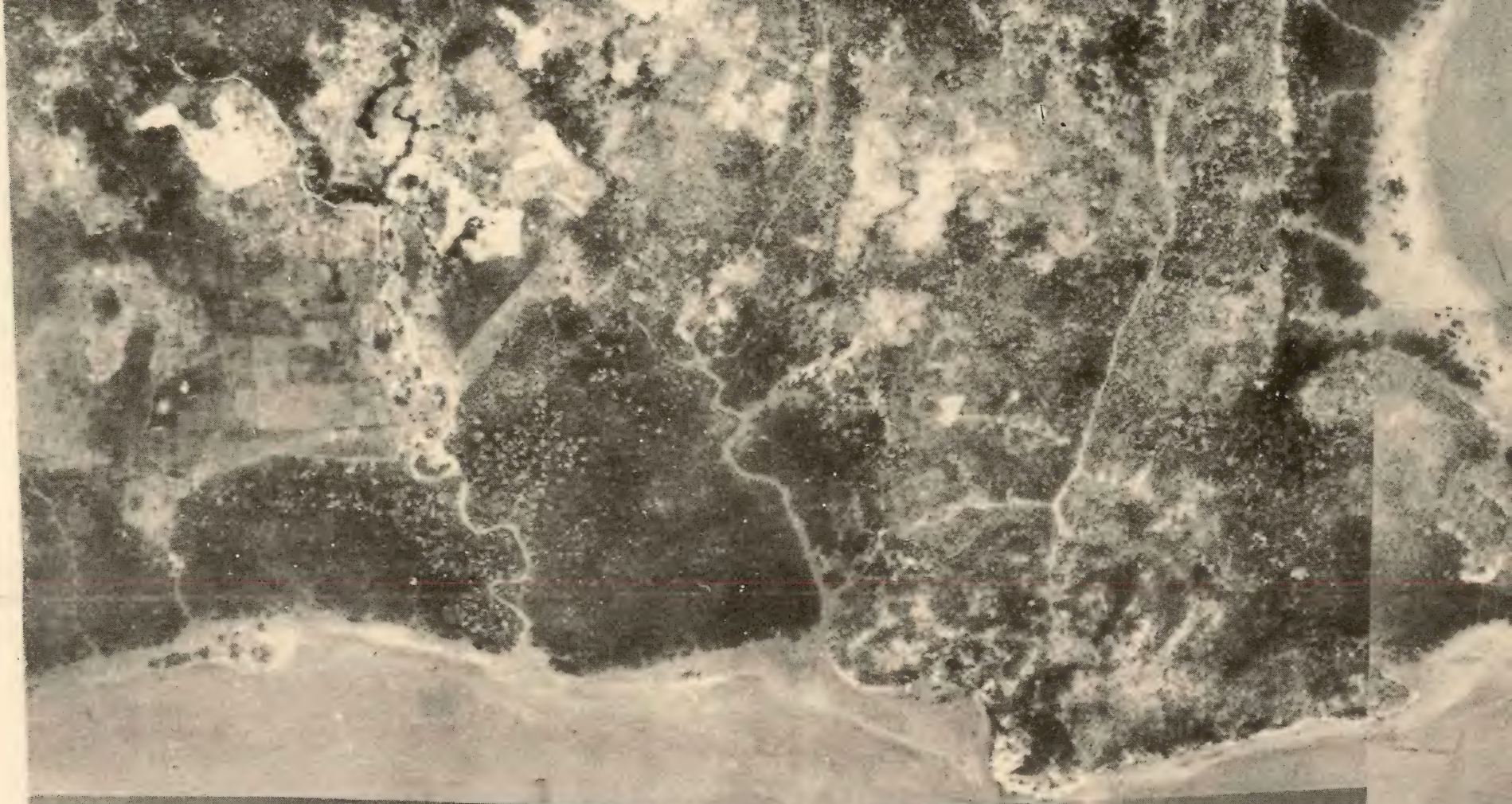












San Jaunice



approx. Z

Strait

500

0

500

1000

Approx. Scale of Yards.





















18. Aerial vertical of town of Basey on the south coast of Samar at the head of San Pedro Bay. 1938.





19. Looking across Jinamoc Island at South coast of Samar. Looking NE. 1937.



20. NW end of Jinamoc Island and town of Basey on Samar Island at head of San Pedro Bay. Looking North. 1936.





21. Southern entrance to San Juanico Strait, the water passage separating Samar and Leyte Islands.  
Looking North. 1936.





22. Close up of San Juanico Strait, showing extensive mangrove swamp along Samar Shore. Looking NW. 1936.





23. Northern entrance to San Juanico Strait. Looking SE. 1936.



24. Calbiga river mouth on west coast of Samar. Looking East. 1936.





25. Daram Island, showing rugged mountainous terrain. Looking West. 1938.



26. Mountainous terrain encountered on Buad Island, off the West coast of Samar. Looking East. 1938.





27. Town of Zumaraga on West coast of Buad Island, municipal capital of the Daram Island group.  
Looking East. 1938.



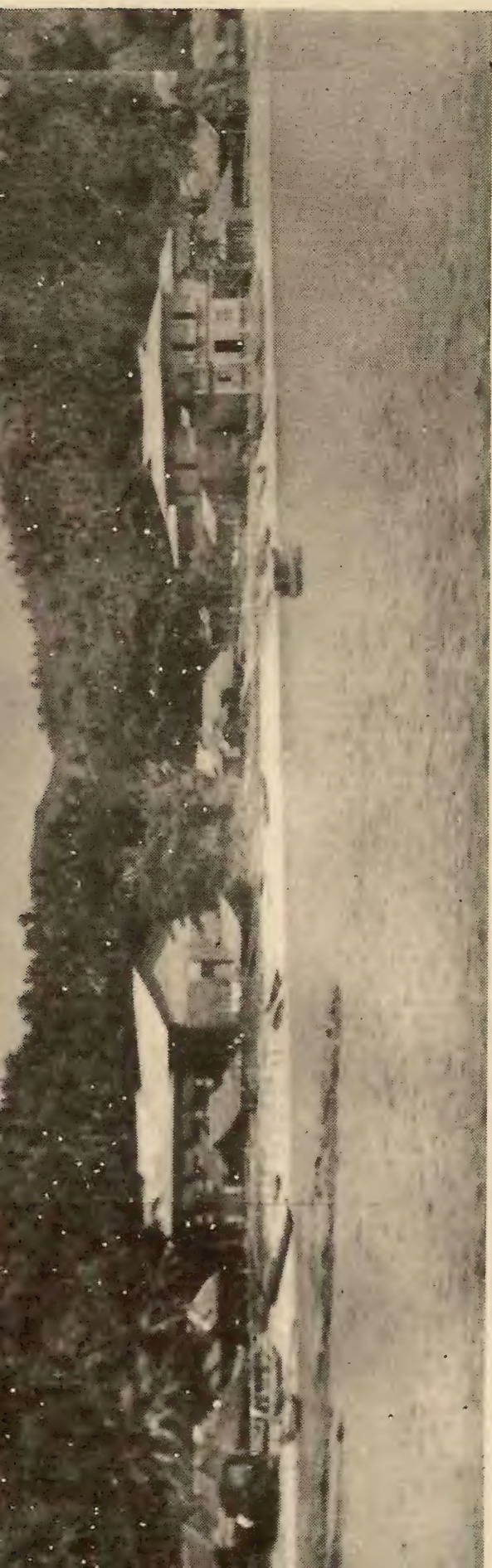


28. Panorama of town of Zumaraga, taken from end of wharf. Looking East. 1936.









28. Panorama of town of Zumarraga, taken from end of wharf. Looking East. 1936.





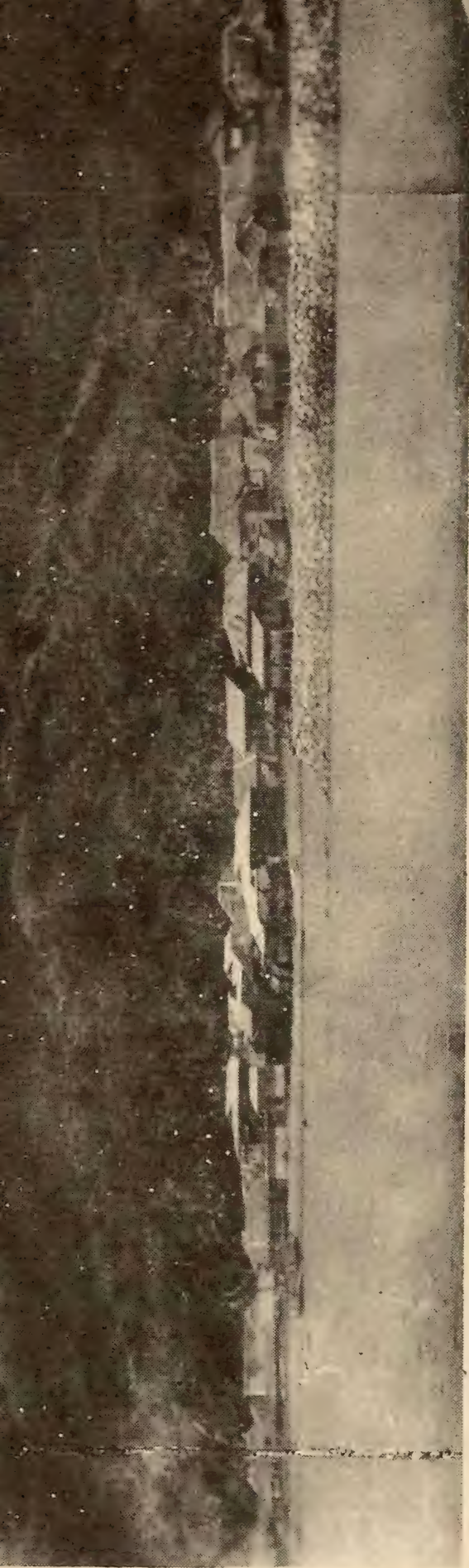
















29. Cogon grass highlands on Buad Island. Looking East. Pre-war.





38. Vertical mosaic of Calbayog area on west coast of Samar Island. 1948.



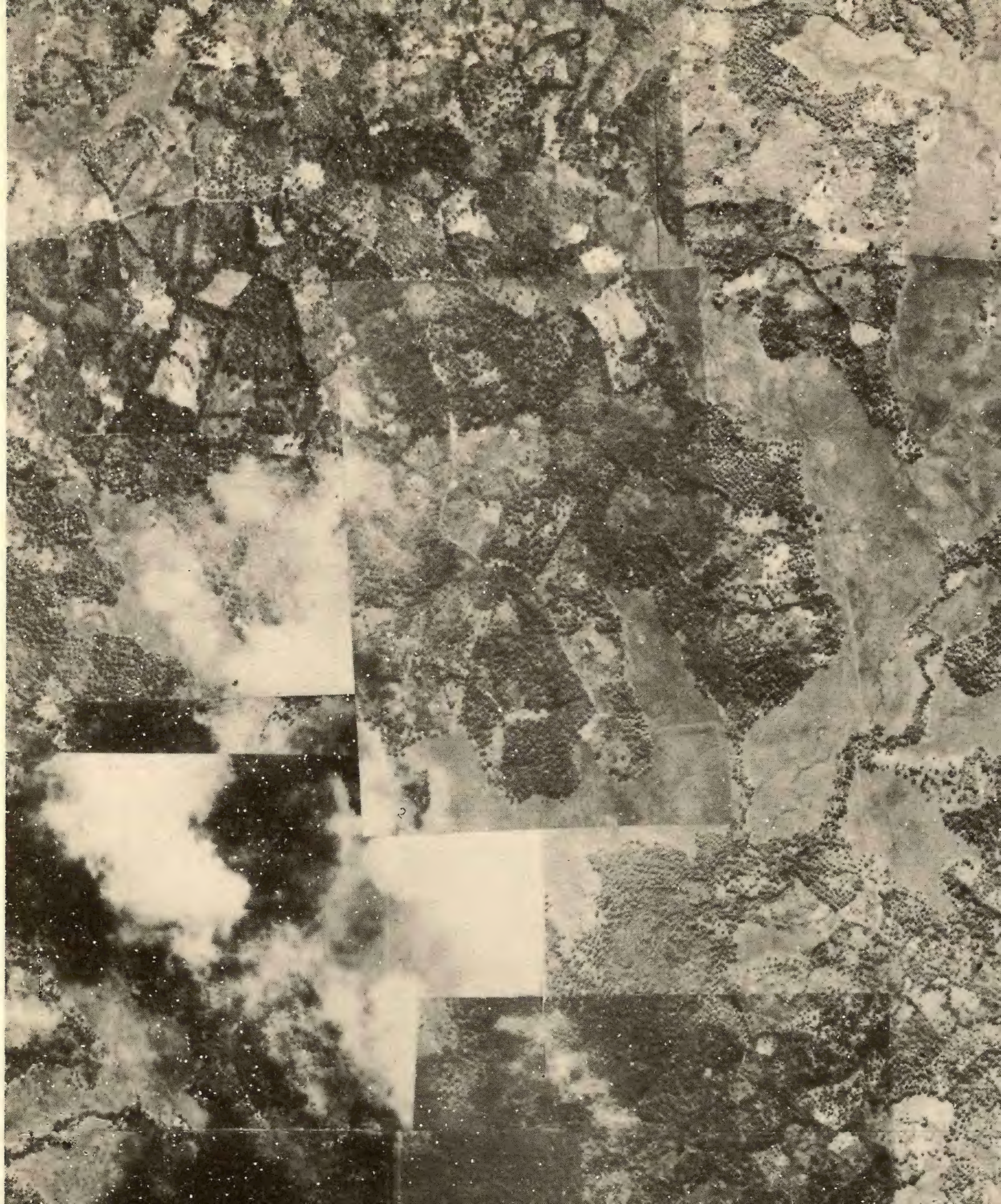






38. Vertical mosaic of Calbayog area on west coast of Samar Island. 1938.









Paddy Area

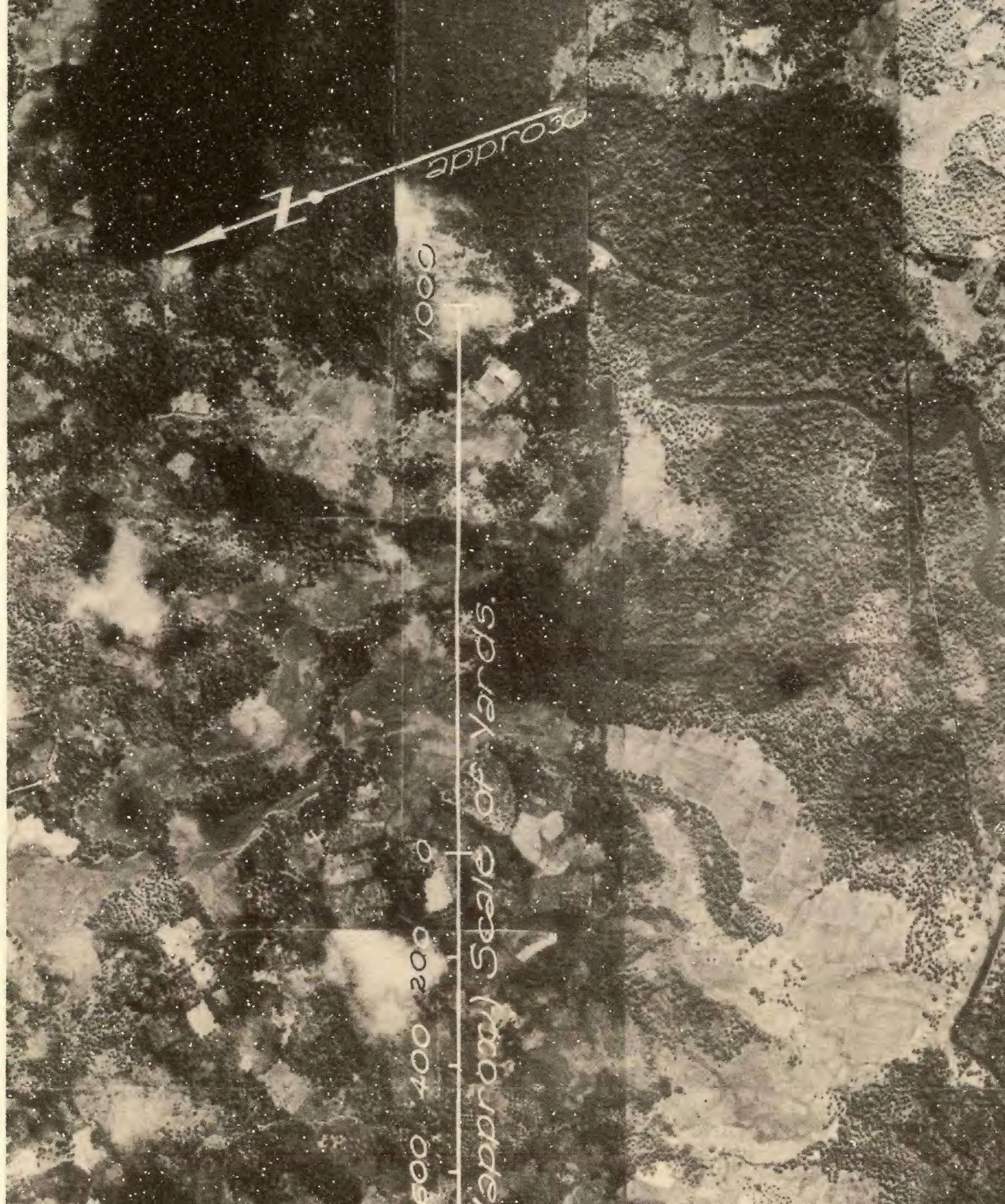


500 400 300 0

(approx) Scale of Yards.

1000

approx



















30. Parasan Island off the North coast of Samar Island, Samar Province. Looking West. 1938.



31. Catbalogan, provincial capital of Samar, on West coast, just north of Maqueda Bay.





32. View of town of Catbalogan and mountainous coastal terrain NW of the town. Looking NW. 1935.



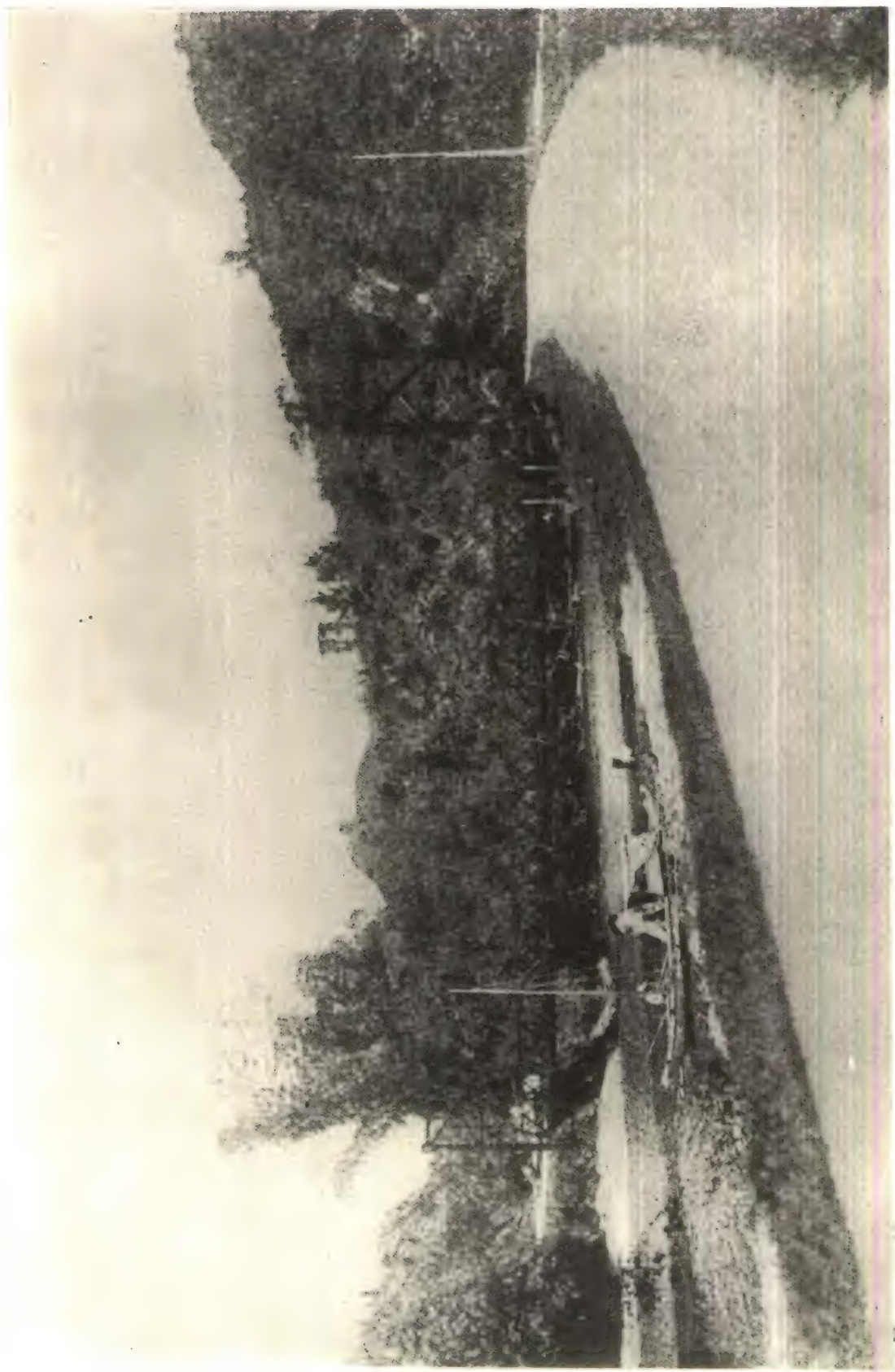


33. View of Catbalogan looking SE across mountainous terrain. Note winding course of Route 1, going South to ferry crossing at La Paz.



34. Provincial capital, Catbalogan, taken from across Jesus Point. Looking SE. 1936.





35. Suspension bridge on Route 1 across Catbalogan river, going north. Looking NW. 1927.





36. Barrio Sierra, on Canahuan Daco Island. Looking West. Pre-war.





37. Barrio Silanga, on west coast, about three miles north of Catbalogan. Looking North. 1936.





38. Vertical mosaic of Calbayog area on west coast of Samar Island. 1948.



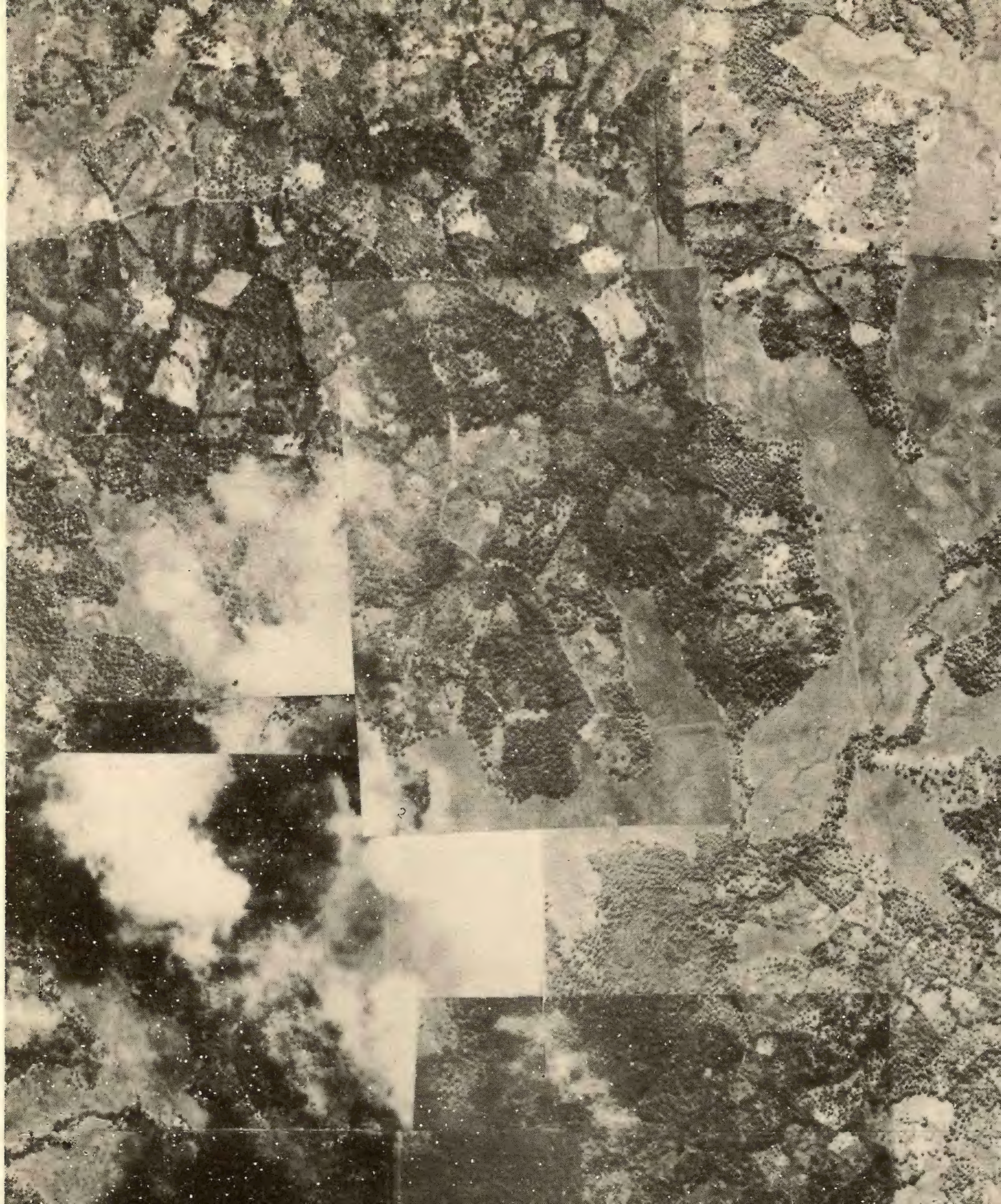






38. Vertical mosaic of Calbayog area on west coast of Samar Island. 1938.









Paddy Area

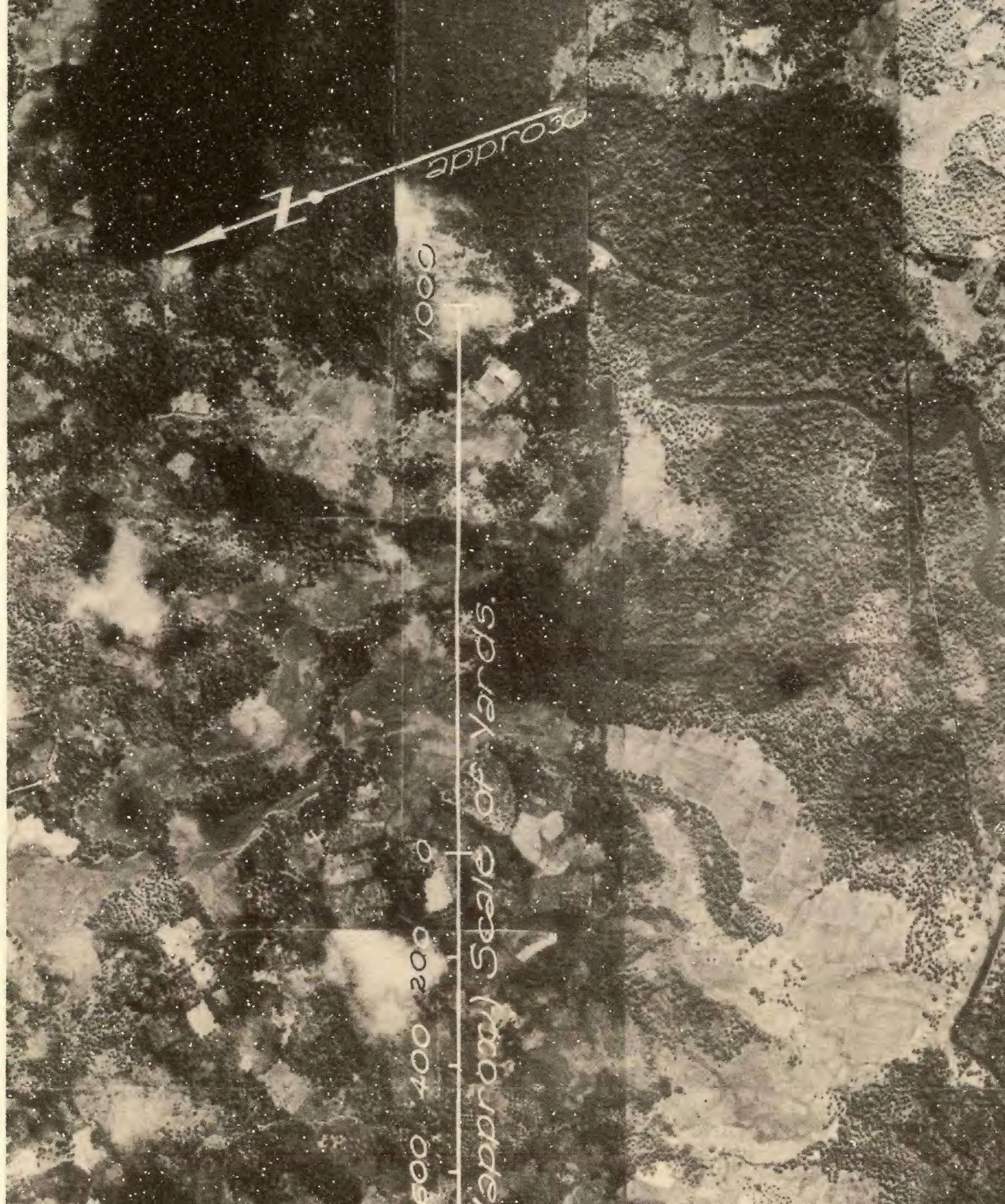


500 400 300 0

(approx) Scale of Yards.

1000

approx







Rice

Calbayog

Calbayog

Small  
Boat  
Channel













39. Vertical photograph of town of Calbayog, showing small boat entrance through shallow water to Quayside docks. 1938.



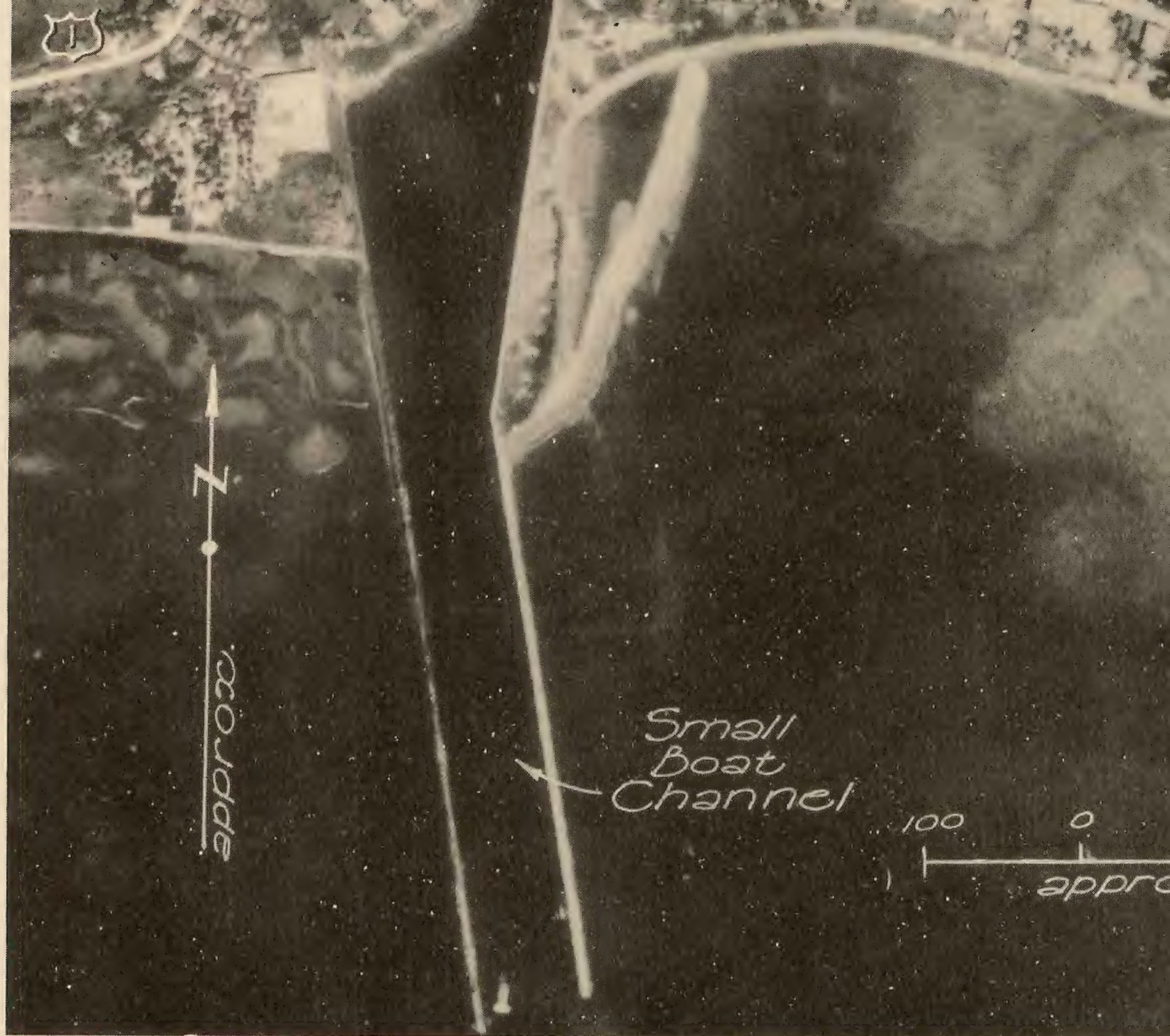






*Rice  
Paddies*





39. Vertical photograph of town of Calbayog, showing small boat entrance through shallow water to Quayside docks. 1938.





200 300 400 500  
Scale of yds.

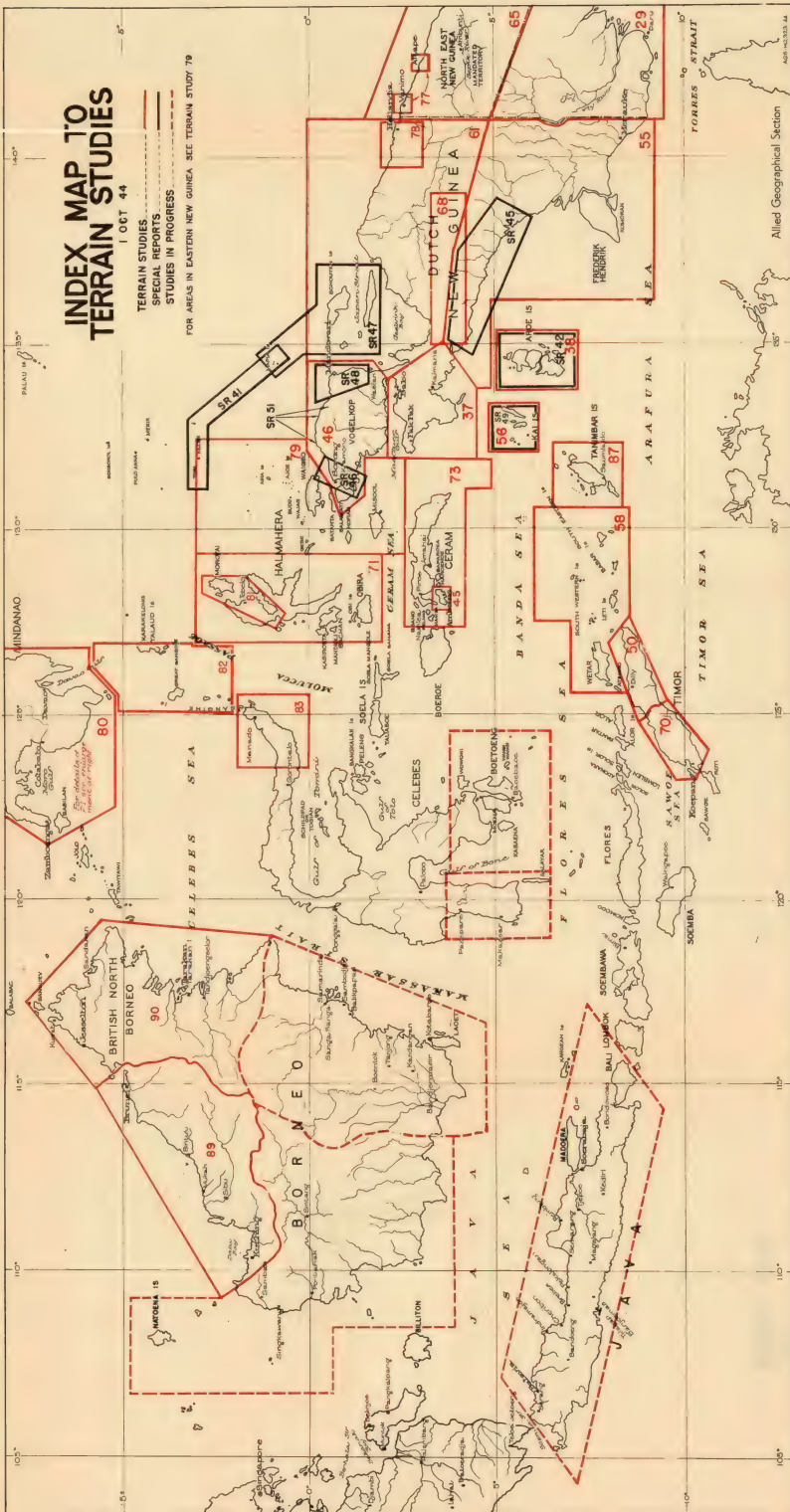


# INDEX MAP TO TERRAIN STUDIES

TERRAIN STUDIES  
SPECIAL REPORTS  
STUDIES IN PROGRESS

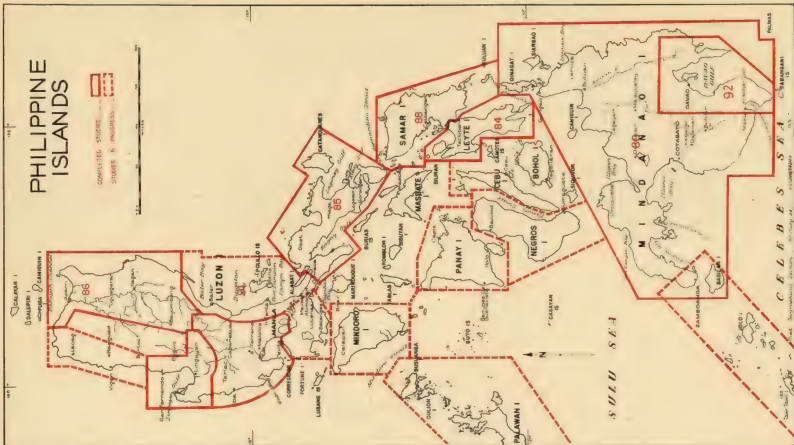
FOR AREAS IN EASTERN NEW GUINEA SEE TERRAIN STUDY 79

1 OCT 44



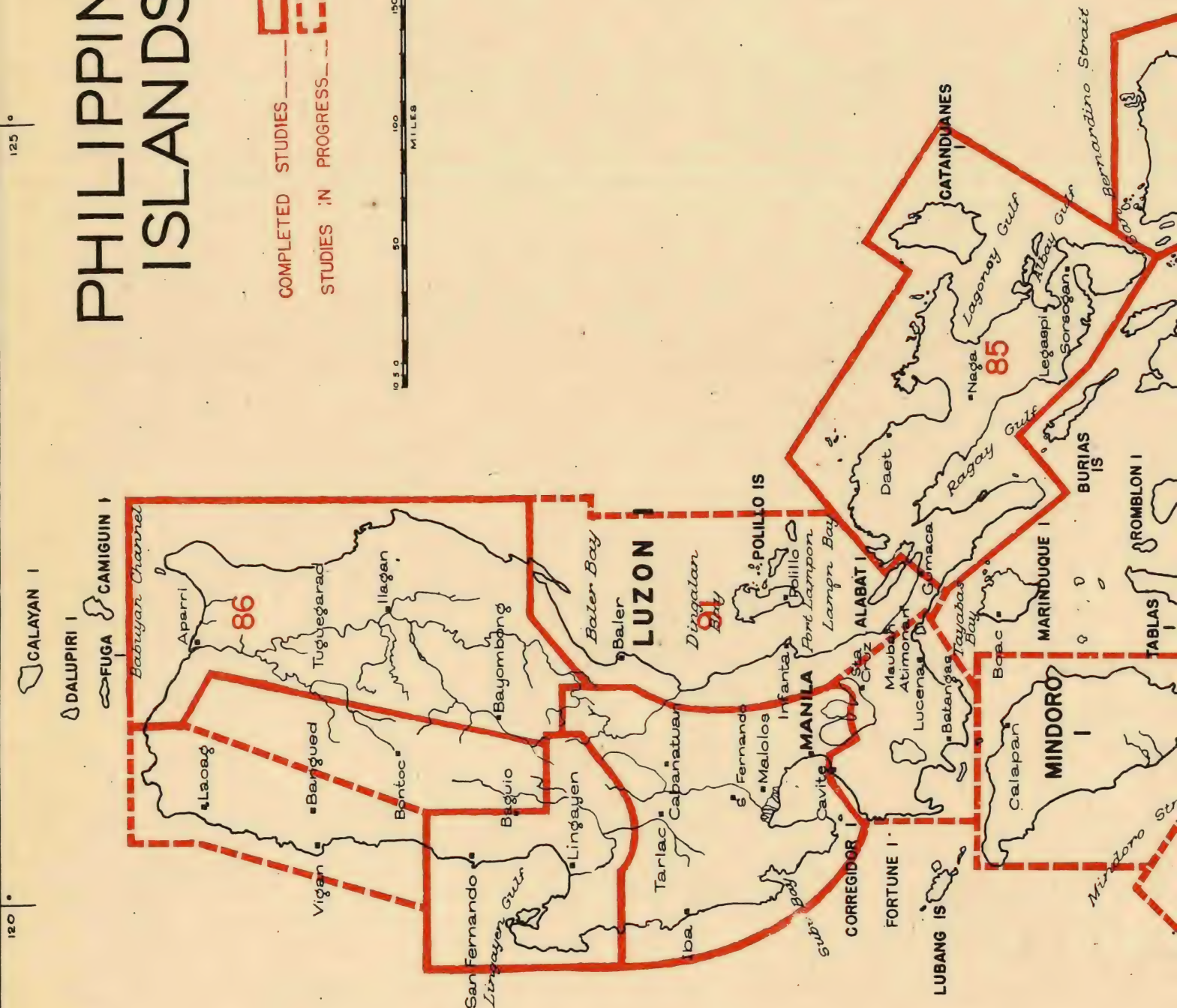
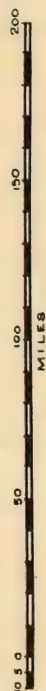
# PHILIPPINE ISLANDS

UNOCCUPIED AREAS  
UNDER U.S. CONTROL

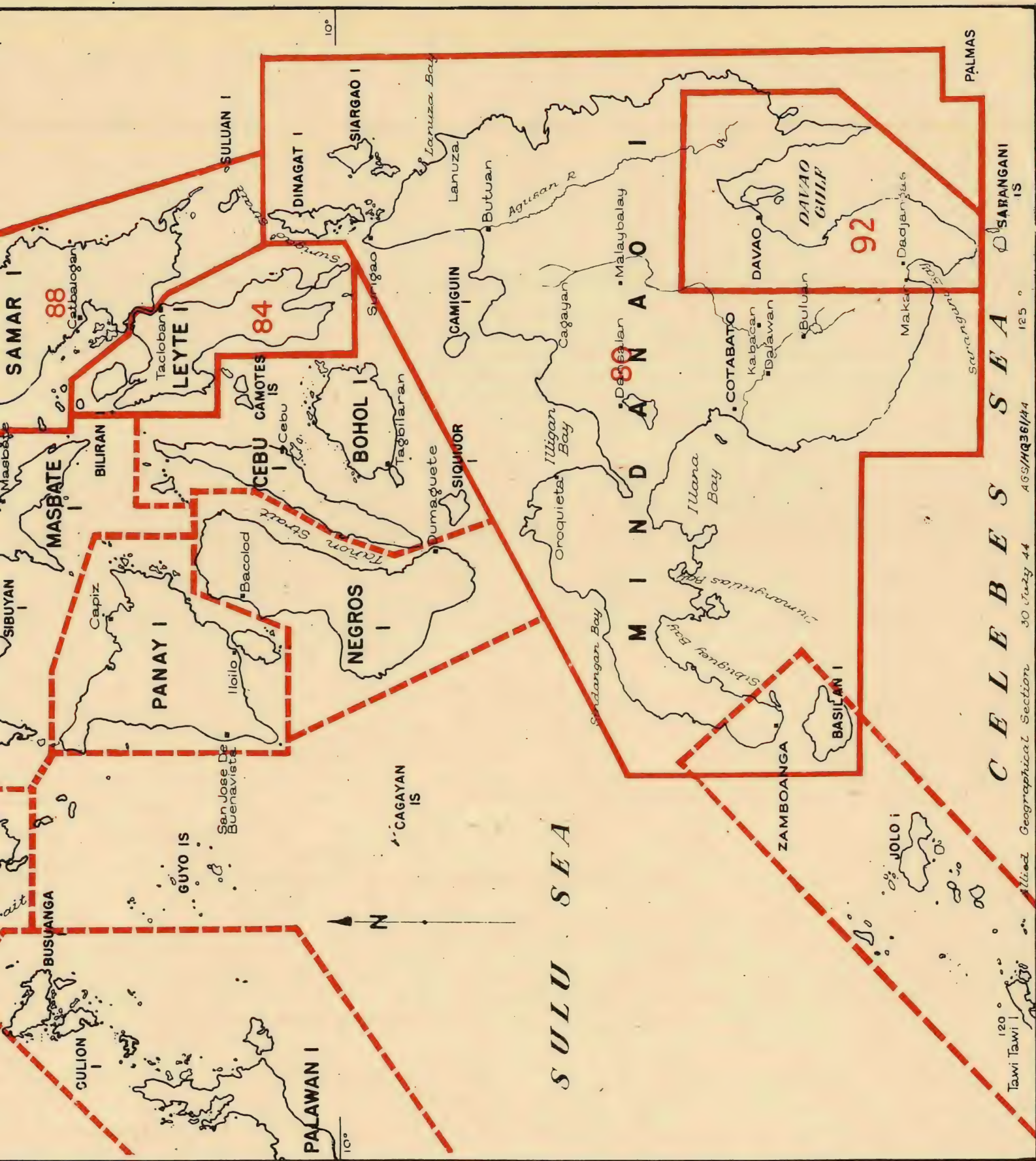




# PHILIPPINE ISLANDS









PALAU IS 135°

140°

# INDEX MAP TO TERRAIN STUDIES

1 OCT 44

5°

SONSOROL Is

PULO ANNA

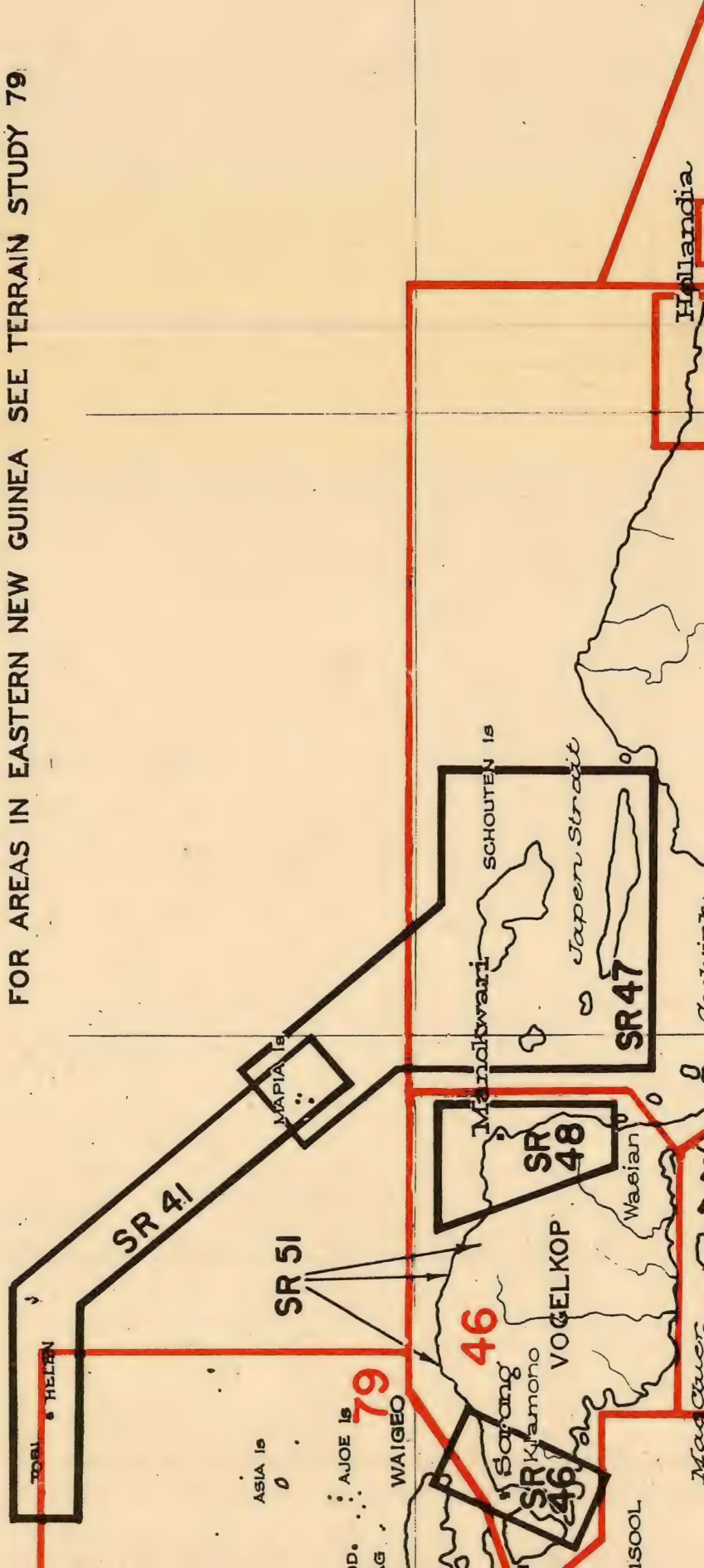
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TERRAIN STUDIES

SPECIAL REPORTS

STUDIES IN PROGRESS

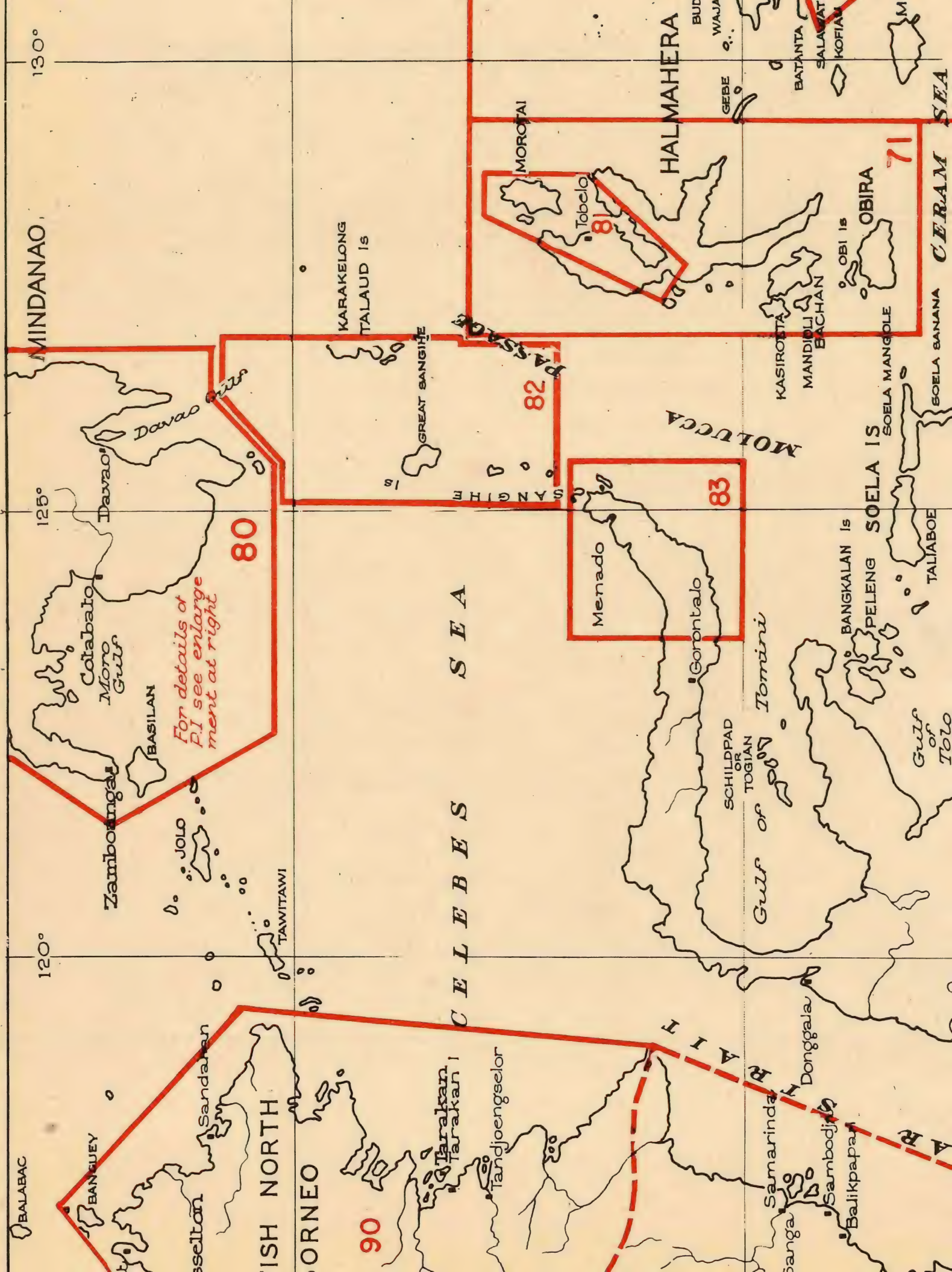
FOR AREAS IN EASTERN NEW GUINEA SEE TERRAIN STUDY 79



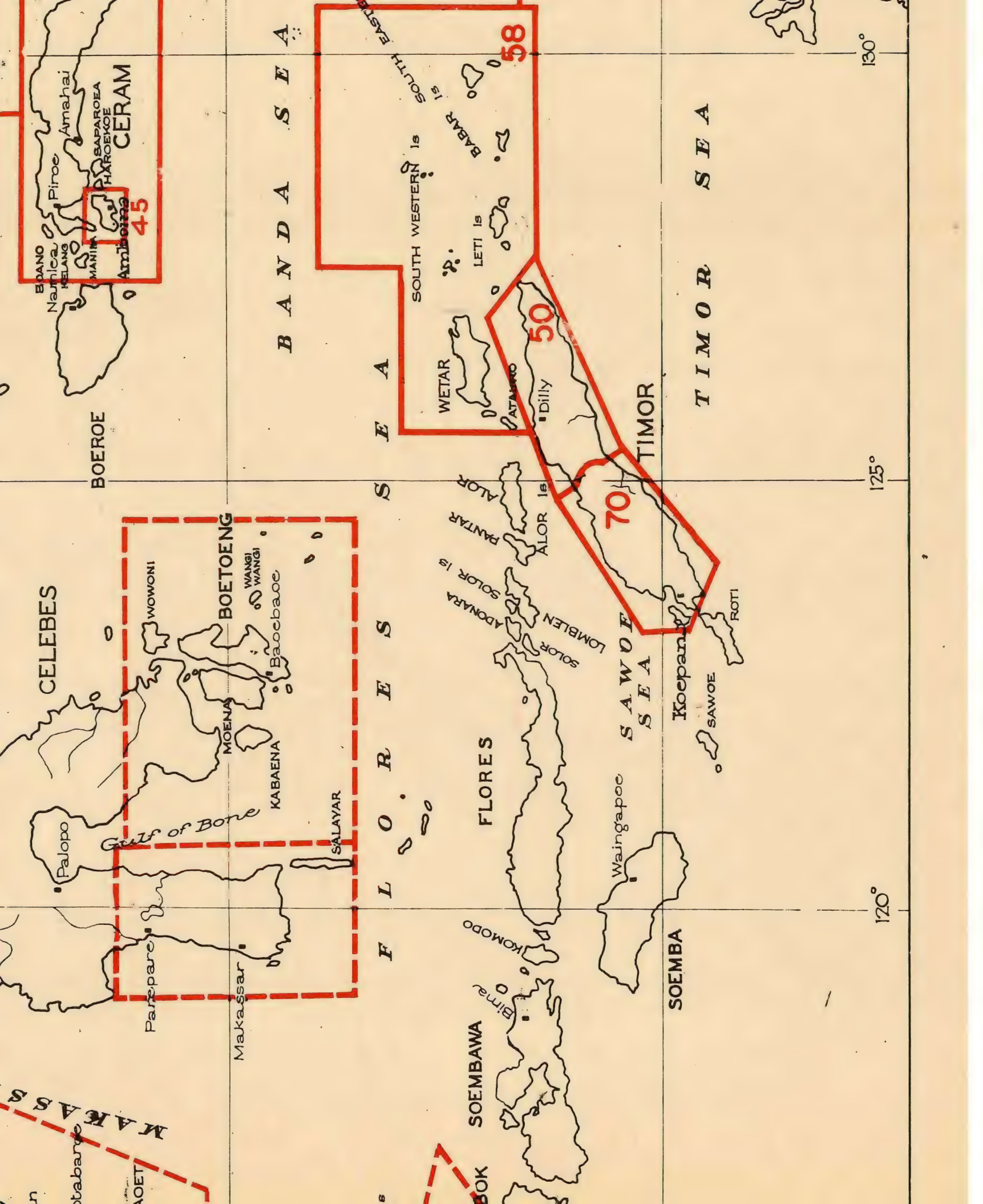




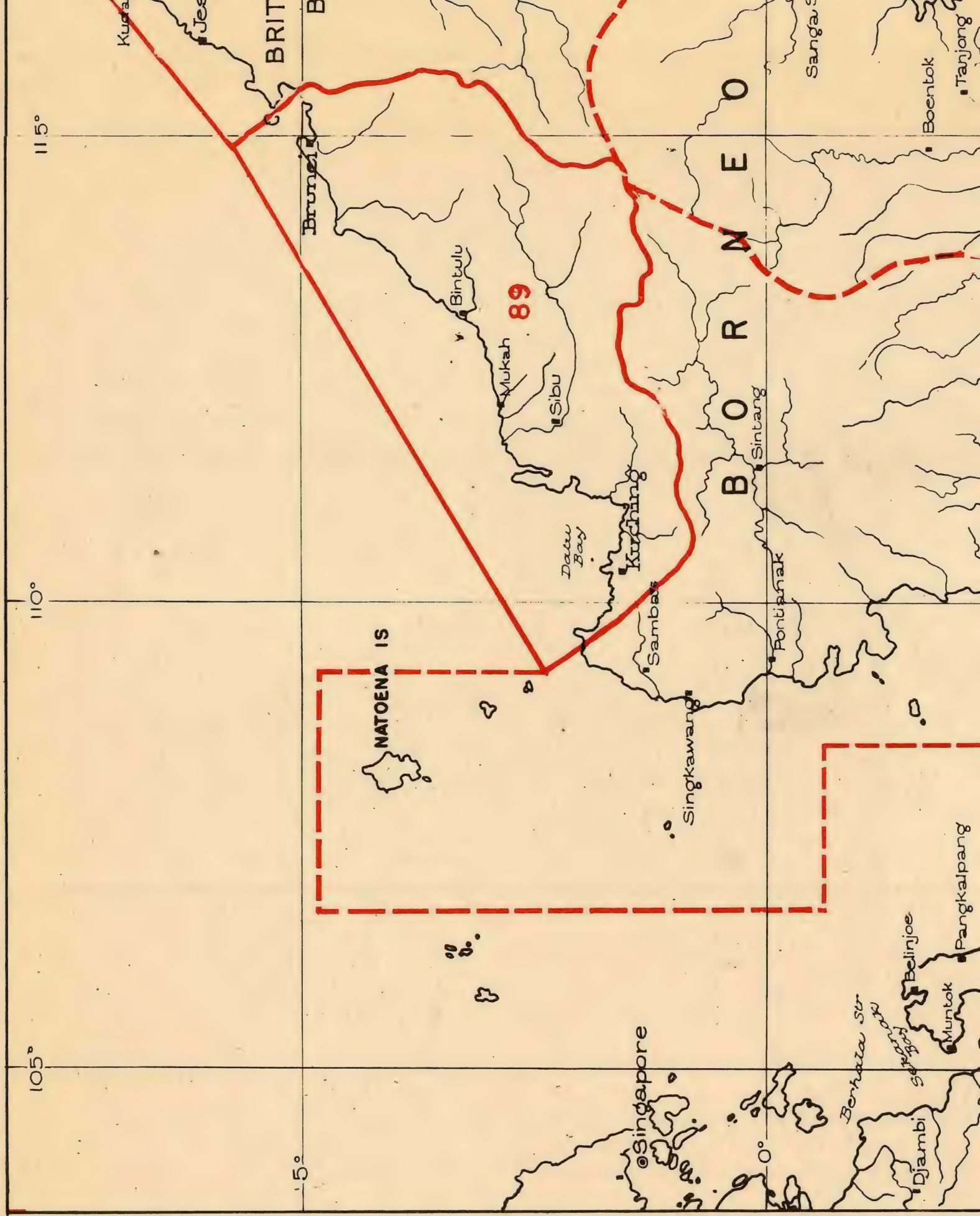




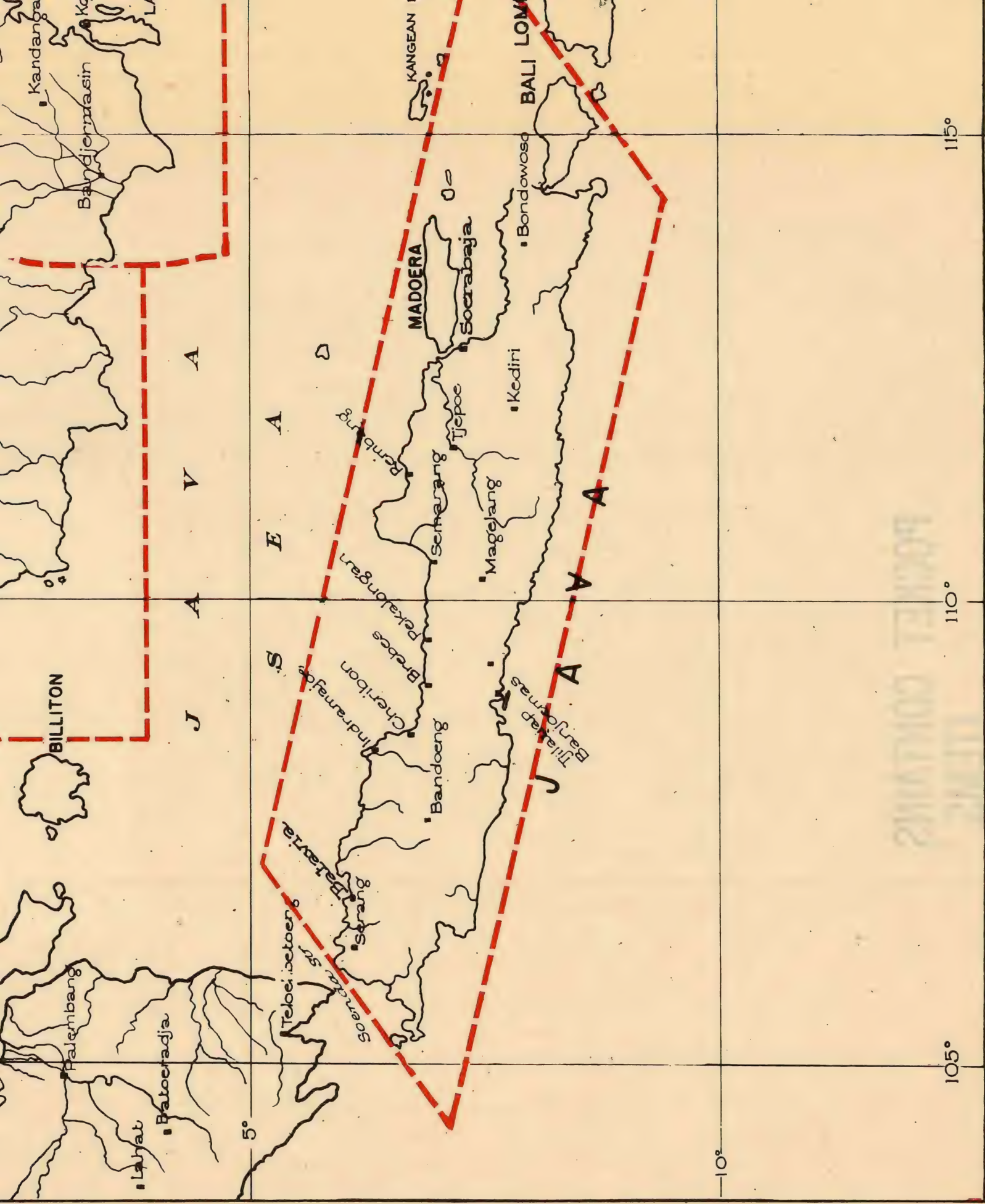




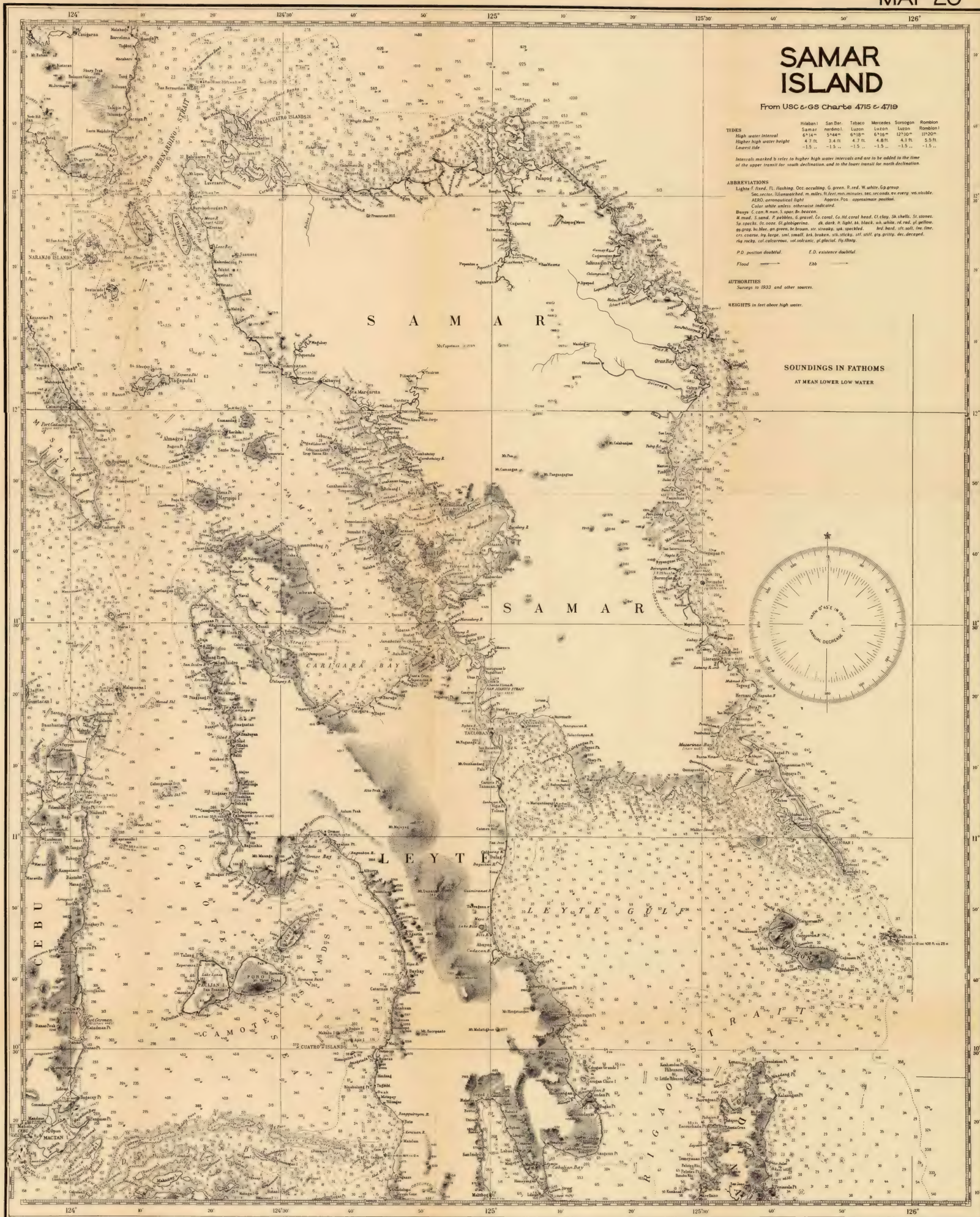












# SAMAR ISLAND

From USC & GS Charts 4715 & 4719

TIDES	Habani	San Ber.	Tabaco	Mercedes	Sorsogon	Rambon
High water interval	6:14"	5:44"	6:18"	6:16"	12:10"	12:20"
Higher high water height	4.7 ft.	3.4 ft.	4.7 ft.	4.8 ft.	4.1 ft.	5.5 ft.
Lowest tide	-1.5 ..	-1.5 ..	-1.5 ..	-1.5 ..	-1.5 ..	-1.5 ..

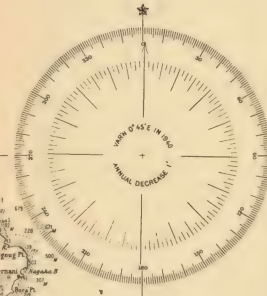
Intervals marked by dots to higher high water intervals and are to be added to the time of the upper transit for south declination and to the lower transit for north declination.

**ABBREVIATIONS**  
 Lights: F, fixed; Fl, flashing; Occ, occulting; G, green; R, red; W, white; Gp, group.  
 Sectors: illuminated in miles; 10 feet one minute; sec, seconds; ev, every; un, unobserved.  
 AERO, aeronautical light.  
 Color white unless otherwise indicated.  
 Buoy: C, can; M, man; S, spar; B, beacon.  
 M, mud; S, sand; P, pebbles; G, gravel; Co, coral; Ca, hill; coral head; Cl, clay; Sh, shells; St, stones.  
 So, rocks; Oc, outer; Gp, gullies; do, dark; Lt, light; A, black; wh, white; rd, red; y, yellow; gy, gray; bl, blue; gn, green; br, brown; sr, silver; sp, speckled; brd, hard; st, soft; fm, fine; cr, coarse; lg, large; sm, small; brk, broken; str, strong; w, weak; g, gully; dec, decayed; the, the; col, colorless; uncol, uncolored; p, plotted; by, by.  
 P.D., position doubtful; E.D., existence doubtful.  
 Flood, Flood; Ebb, Ebb.

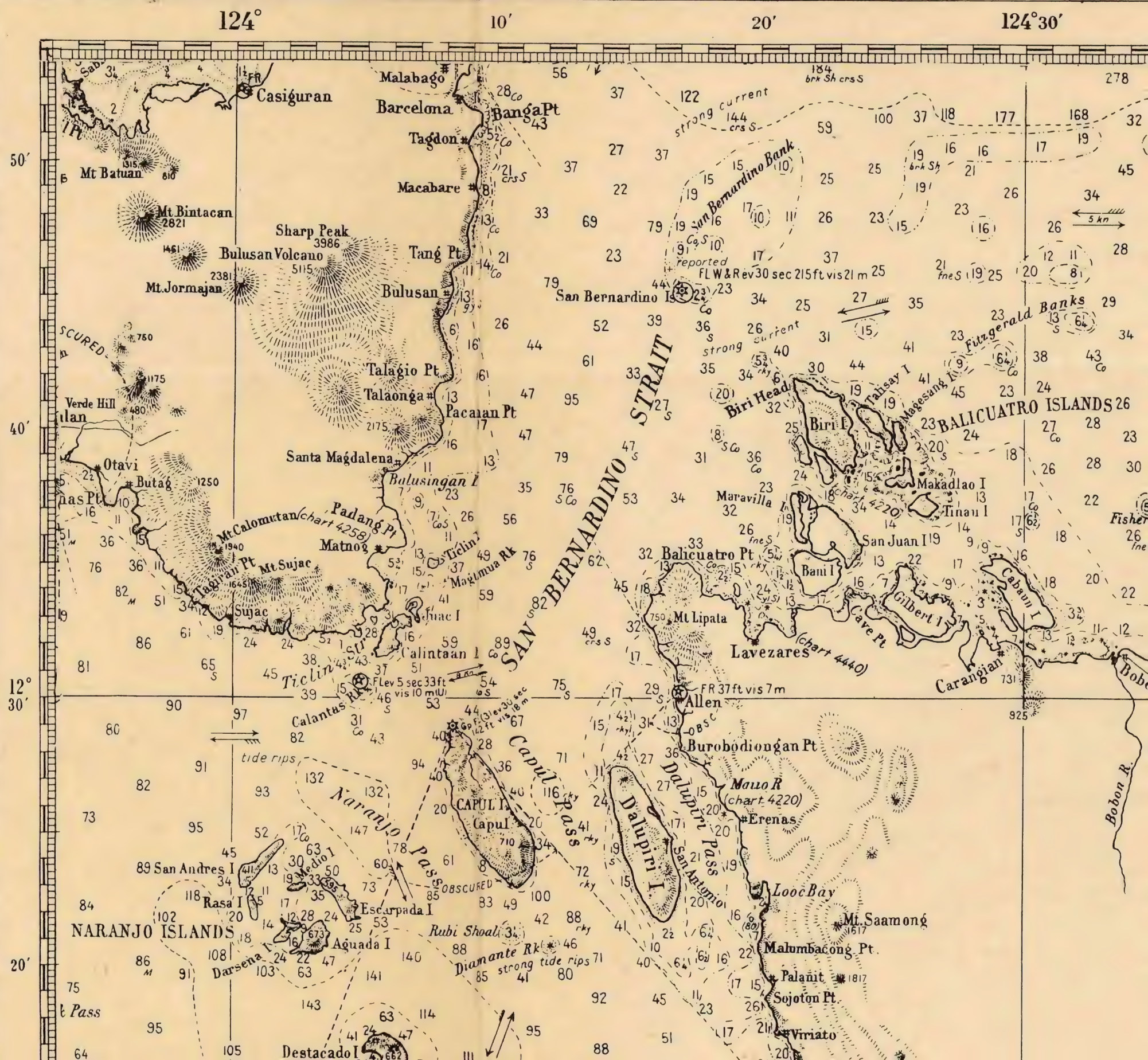
**AUTHORITIES**  
 Surveys to 1933 and other sources.

HEIGHTS in feet above high water.

SOUNDINGS IN FATHOMS  
 AT MEAN LOWER LOW WATER













# MAP 20

125°30'

40'

50'

126°

## SAMAR ISLAND

From USC & GS Charts 4715 & 4719

### TIDES

	Hilaban I. Samar	San Ber- nardino I.	Tabaco Luzon	Mercedes Luzon	Sorsogon Luzon	Romblon Romblon I
<i>High water interval</i>	6 <sup>h</sup> 14 <sup>m</sup>	5 <sup>h</sup> 44 <sup>m</sup>	6 <sup>h</sup> 18 <sup>m</sup>	6 <sup>h</sup> 16 <sup>m</sup>	12 <sup>h</sup> 10 <sup>m</sup>	11 <sup>h</sup> 20 <sup>m</sup>
<i>Higher high water height</i>	4.7 ft.	3.4 ft.	4.7 ft.	4.8 ft.	4.1 ft.	5.5 ft.
<i>Lowest tide</i>	-1.5 ,,	-1.5 ,,	-1.5 ,,	-1.5 ,,	-1.5 ,,	-1.5 ,,

*Intervals marked b refer to higher high water intervals and are to be added to the time of the upper transit for south declination, and to the lower transit for north declination.*

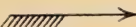
### ABBREVIATIONS

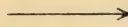
**Lights:** F. fixed, FL. flashing, Occ. occulting, G. green, R. red, W. white, Gp. group  
 Sec. sector, (U) unwatched, m. miles, ft. feet, min. minutes, sec. seconds, ev. every, vis. visible.  
**AERO.** aeronautical light.      Approx. Pos. approximate position.  
 Color white unless otherwise indicated.

**Buoys:** C. can, N. nun, S. spar, Bn. beacon.  
 M. mud, S. sand, P. pebbles, G. gravel, Co. coral, Co. Hd. coral head, Cl. clay, Sh. shells, St. stones.  
 Sp. specks, Oz. ooze, Gl. globigerina.      dk. dark, lt. light, bk. black, wh. white, rd. red, yl. yellow,  
 gy. gray, bu. blue, gn. green, br. brown, str. streaky, spk. speckled.      hrd. hard, sft. soft, fne. fine,  
 crs. coarse, lrg. large, sml. small, brk. broken, stk. sticky, stf. stiff, gty. gritty, dec. decayed,  
 rky. rocky, cal. calcareous, vol. volcanic, gl. glacial, fly. flinty.

P. D. position doubtful.

E. D. existence doubtful.

Flood 

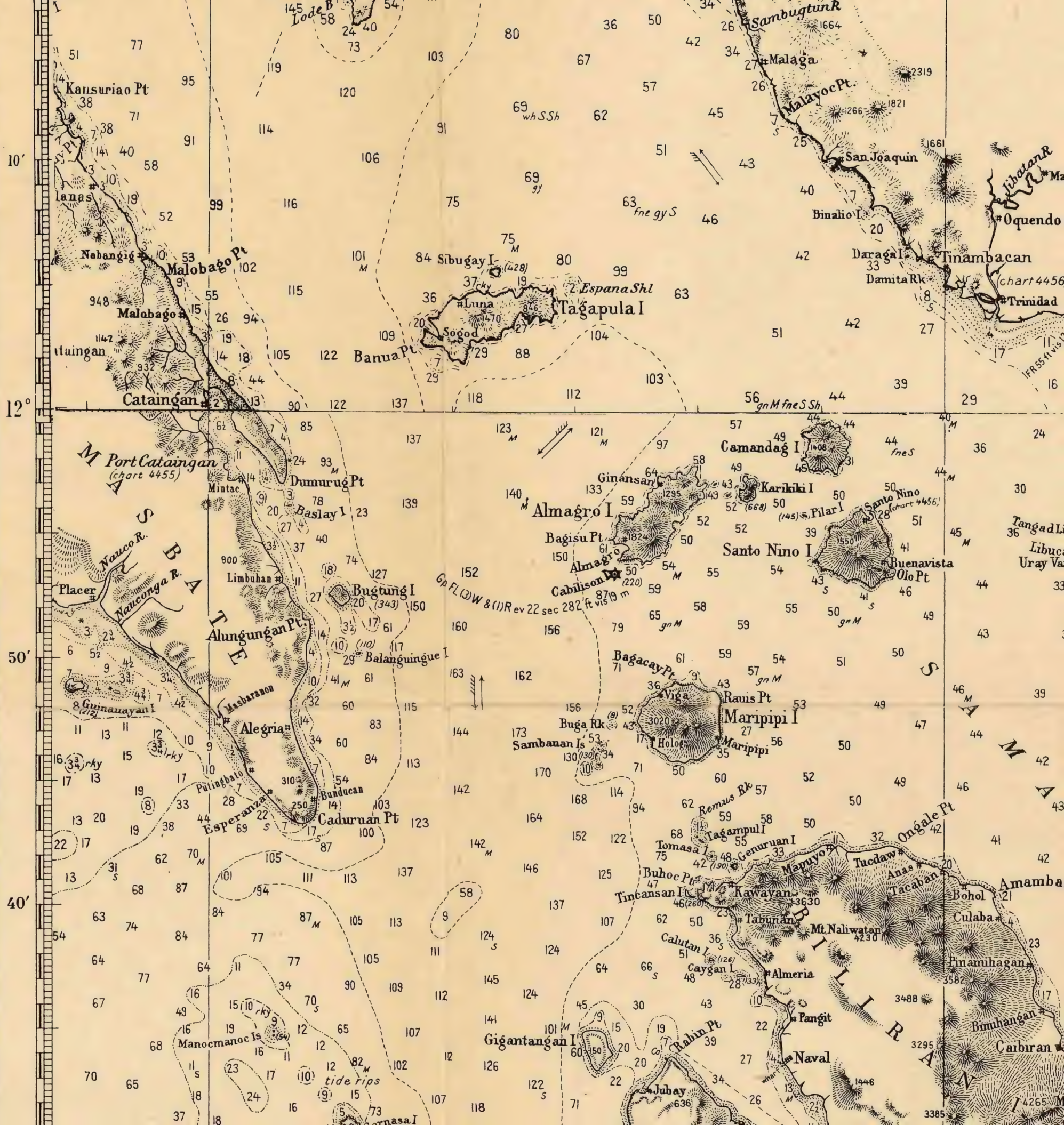
Ebb 

### AUTHORITIES

Surveys to 1933 and other sources.

417  
rky  
449  
M  
39  
254  
5  
432







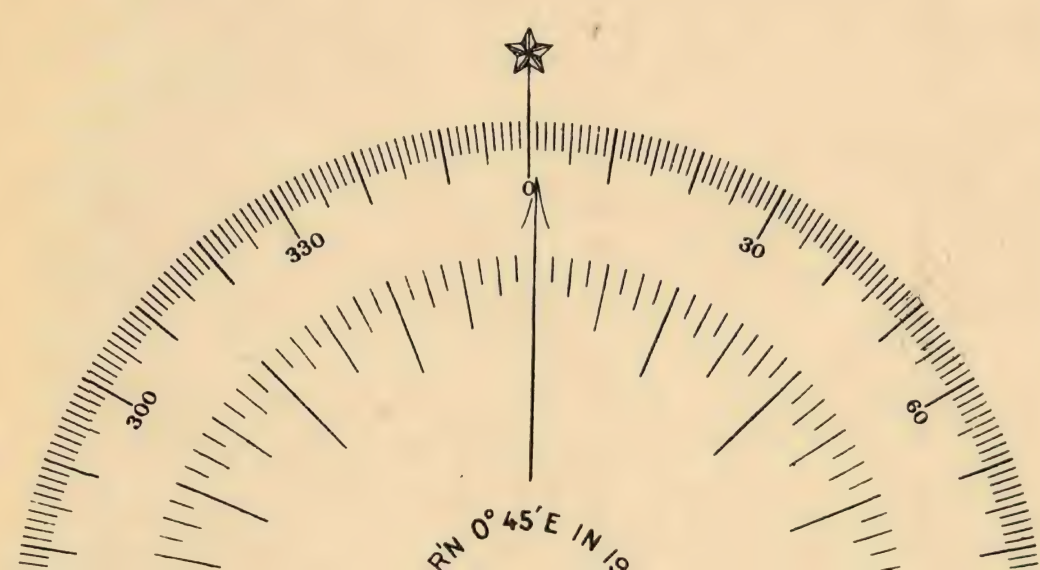
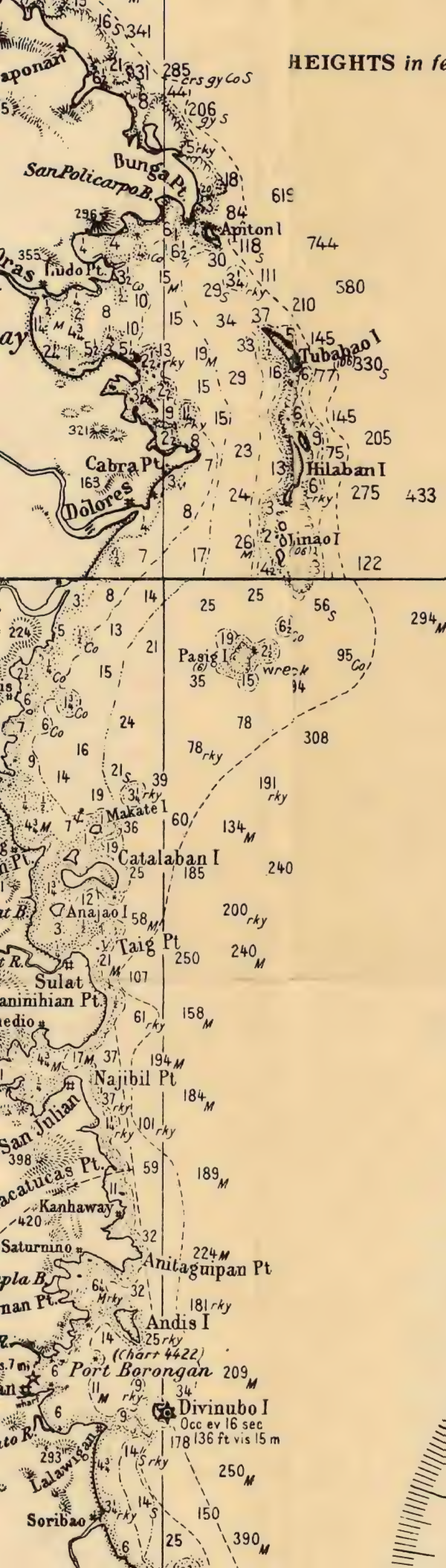
3



HEIGHTS in feet above high water.

# SOUNDINGS IN FATHOMS

AT MEAN LOWER LOW WATER



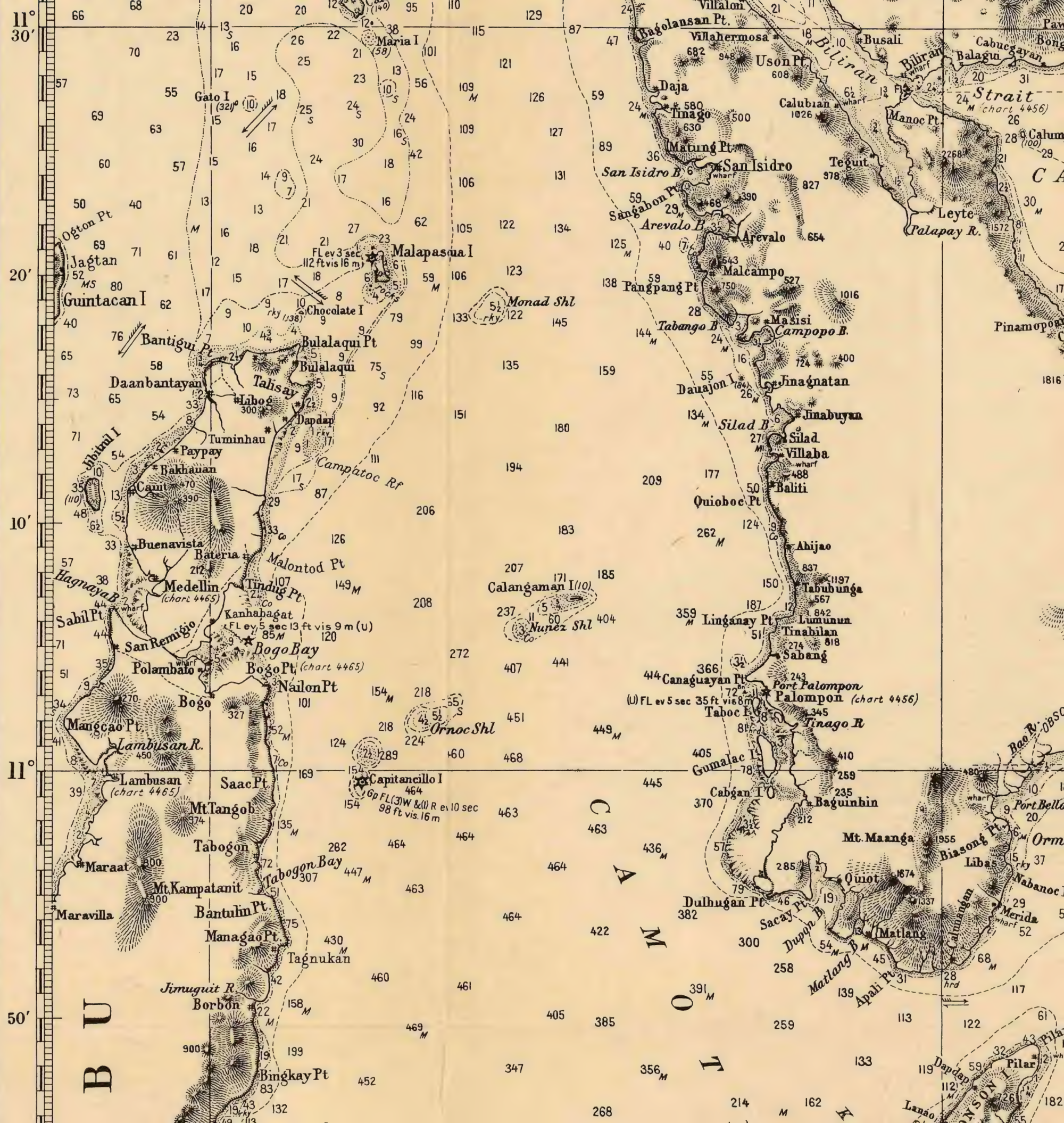
10'

12°

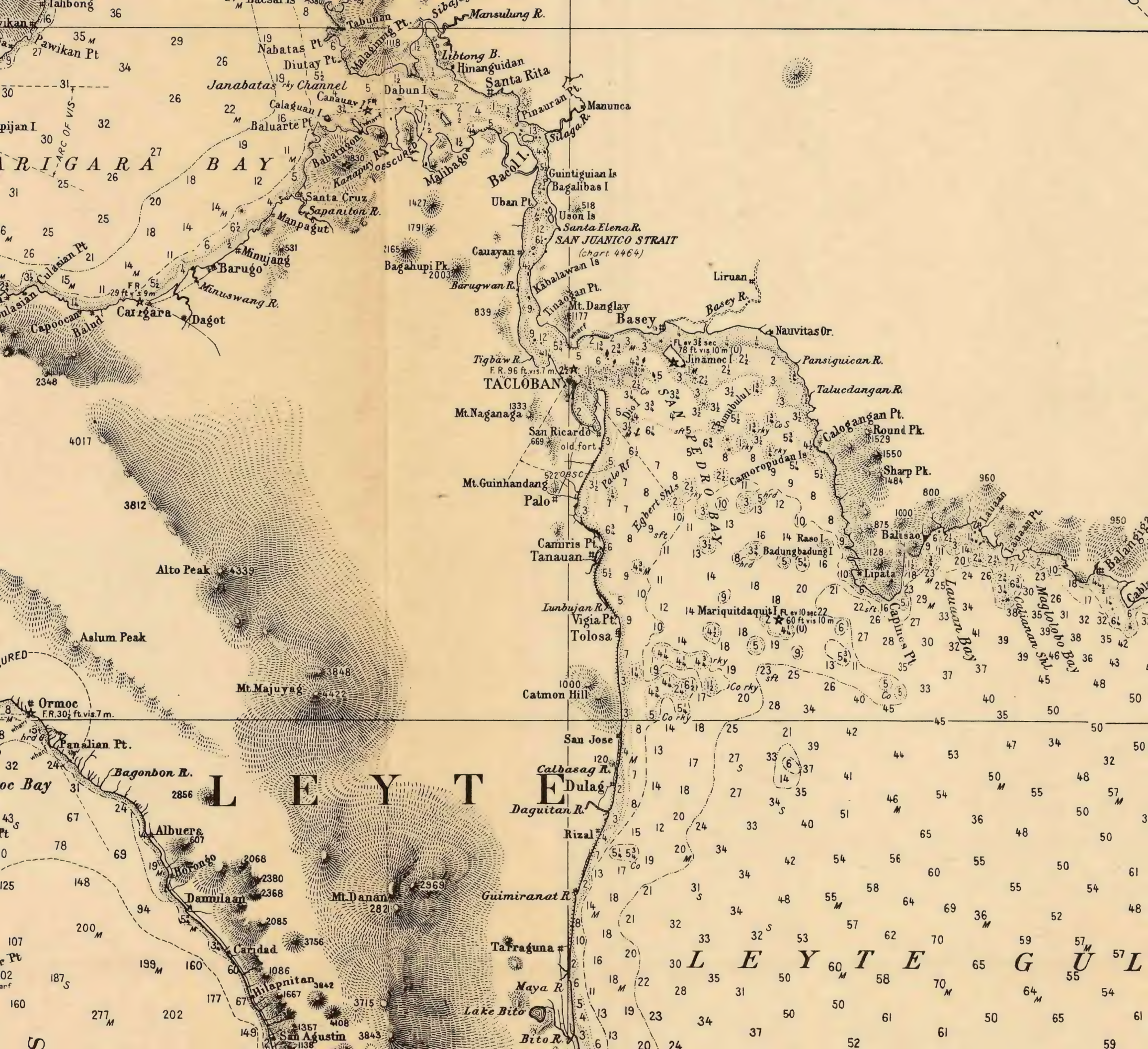
50'

40'

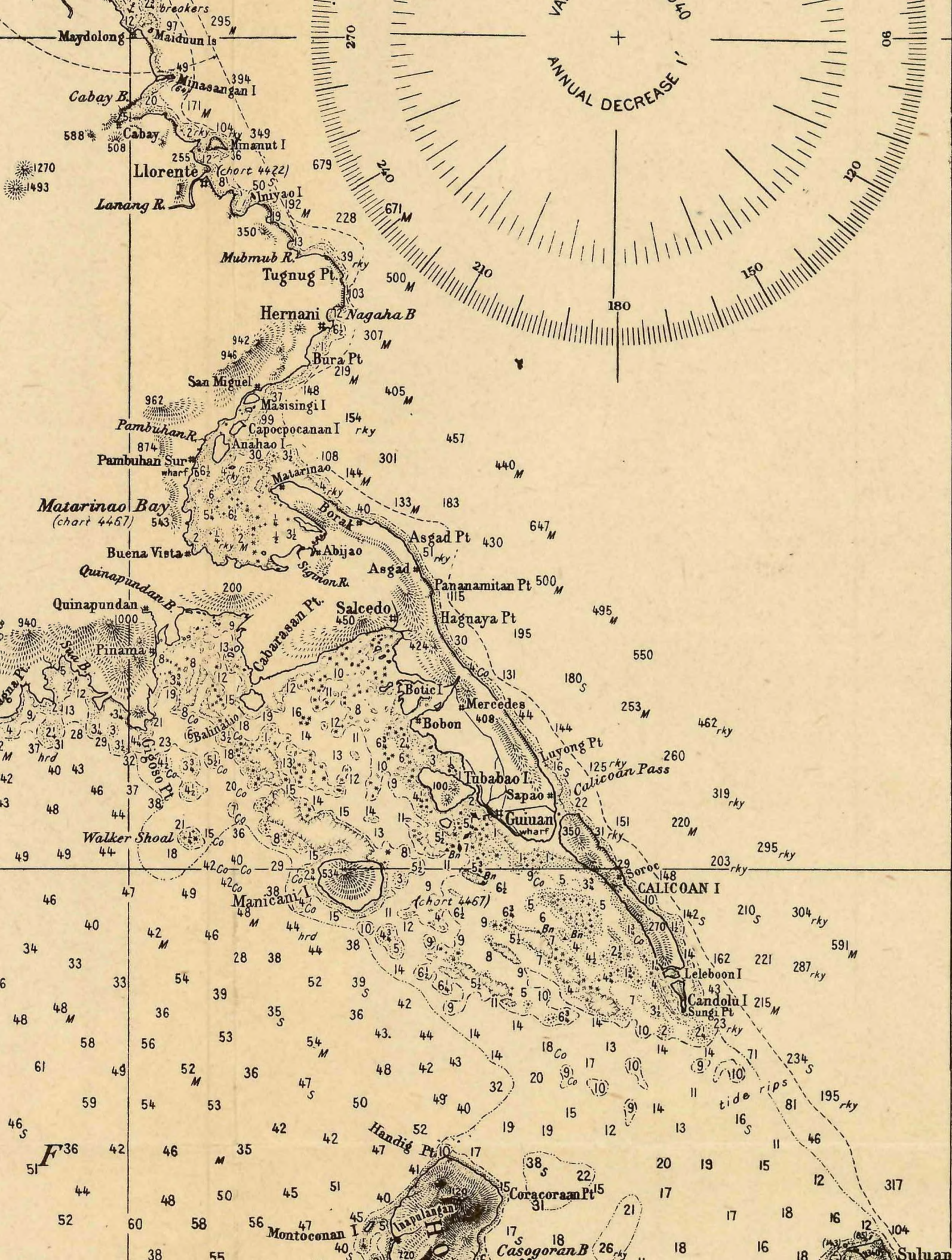












11° 30'

20'

10'

11°

50'



